



**ASHEVILLE-BUNCOMBE
TECHNICAL INSTITUTE**
AT NIGHT 1979-80

This bulletin should not be considered a contract between Asheville-Buncombe Technical Institute and any prospective student. All charges for tuition and fees are subject to change as required by the Board of Trustees. Also curriculum offerings may be altered to meet the needs of individual departments.

An Equal Opportunity Educational Institution

Featured is the new Learning Resources Center building which houses the Library and the Educational Satellite Program.

ASHEVILLE-BUNCOMBE

TECHNICAL INSTITUTE

340 Victoria Road
Asheville, N. C.

Recognized and Approved By
North Carolina State Board of Education
North Carolina Department of Community Colleges
Division of Vocational Rehabilitation
and for Veterans Participation

Member of
American Association of Community and Junior Colleges
North Carolina Department of Community Colleges
Student Services Personnel Association
N.C.A.C.C. Instructional Administrators
Association of Community College Business Officials
American Library Association
Learning Resources Association

Accredited By
North Carolina Board of Nursing
National Accrediting Agency for Clinical Laboratory Sciences
American Medical Association
American Dental Association
Southern Association of Colleges and Schools

Evening Bulletin

Volume 10
1979-80

1979

SEPTEMBER

Sun	Mon	Tues	Wed	Thu	Fri	Sat
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
²³ ₃₀	24	25	26	27	28	29

OCTOBER

Sun	Mon	Tues	Wed	Thu	Fri	Sat
		1	2	3	4	5
7	8	9	10	11	12	13
14	15	16	17	18	19	20
21	22	23	24	25	26	27
28	29	30	31			

NOVEMBER

Sun	Mon	Tues	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
²³ ₃₀	25	26	27	28	29	30

DECEMBER

Sun	Mon	Tues	Wed	Thu	Fri	Sat
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
²³ ₃₀	²⁴ ₃₁	25	26	27	28	29

1980

JANUARY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

FEBRUARY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	

MARCH

Sun	Mon	Tue	Wed	Thu	Fri	Sat
					1	
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
²³ ₃₀	²⁴ ₃₁	25	26	27	28	29

APRIL

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30			

MAY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
				1	2	3
4	5	6	7	8	9	10
11	12	13	14	15	16	17
18	19	20	21	22	23	24
25	26	27	28	29	30	31

JUNE

Sun	Mon	Tue	Wed	Thu	Fri	Sat
1	2	3	4	5	6	7
8	9	10	11	12	13	14
15	16	17	18	19	20	21
22	23	24	25	26	27	28
29	30					

JULY

Sun	Mon	Tue	Wed	Thu	Fri	Sat
		1	2	3	4	5
6	7	8	9	10	11	12
13	14	15	16	17	18	19
20	21	22	23	24	25	26
27	28	29	30	31		

AUGUST

Sun	Mon	Tue	Wed	Thu	Fri	Sat
			1	2		
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
²⁴ ₃₁	25	26	27	28	29	30

EVENING SCHOOL CALENDAR 1979-80

FALL QUARTER

Registration	August 29, 30, Sept. 4
Fees may be paid	August 29-31, Sept. 4
Classes Begin	September 5
Last day for Registration	September 11
Last night of Classes	November 20
Total Class Nights	44

Holidays

Thanksgiving	November 21-25
--------------------	----------------

WINTER QUARTER

Registration	November 5-20, 26
Fees may be paid	November 12-16, 26
Classes Begin	November 27
Last day for Registration	December 3
Last night of Classes	February 25
Total Class Nights	44
*Inclement Weather Make-up Nights	February 26-28

Holidays

Christmas	December 19-31
New Year's	January 1

SPRING QUARTER

Registration	February 11-25, March 3
Fees may be paid	February 18-21, March 3
Classes Begin	March 4
Last day for Registration	March 10
Last night of Classes	May 20
Total Class Nights	44

Holidays

Easter Monday	April 7
---------------------	---------

SUMMER QUARTER

Registration	May 5-20, June 2
Fees may be paid	May 12-16, June 2
Classes Begin	June 3
Last day for Registration	June 9
Last night of Classes	August 19
Total Class Nights	44
Graduation	August 22

Holidays

Independence Day	July 3
------------------------	--------

*Nights lost because of inclement weather may be made up during this period.

INSTITUTE CALENDAR 1979-80

FALL QUARTER

Registration	September 4
Classes Begin	September 5
Last Day for Registration	September 11
Last Day of Examinations	November 20
Total Class Days	55
Instructor Work Day and In-Service Education.....	November 21
Registration for Winter Quarter	November 14, 15, 16
Holidays	
Thanksgiving	November 22, 23

WINTER QUARTER

Registration	November 26
Classes Begin	November 27
Last Day for Registration	December 3
Last Day of Examinations	February 22
Total Class Days	55
*Instructor Work Days	February 25
Registration for Spring Quarter	February 14, 15
Holidays	
Christmas	December 20-31
New Year's	January 1
*Instructor Vacation	February 26, 27, 28, 29

SPRING QUARTER

Registration	March 3
Classes Begin	March 4
Last Day for Registration	March 10
Last Day of Examinations	May 21
Total Class Days	55
Instructor Work Days	May 22, 23
Registration for Summer Quarter	May 15, 16

Holidays

Good Friday , Easter Monday	April 4 and 7
Instructor Vacation	May 26, 27, 28, 29, 30

SUMMER QUARTER

Registration	June 2
Classes Begin	June 3
Last Day for Registration	June 9
Last Day of Examinations	August 19
Total Class Days	55
Instructor Work Days	August 20, 21, 22
Graduation	August 22
Registration for Fall Quarter	August 14, 15, 27, 28, 29

Holidays

Independence Day	July 4
Labor Day	September 1
Instructor Vacation	August 25, 26, 27, 28, 29

*Up to four days lost because of inclement weather may be made up at this time.

Table Of Contents

Page

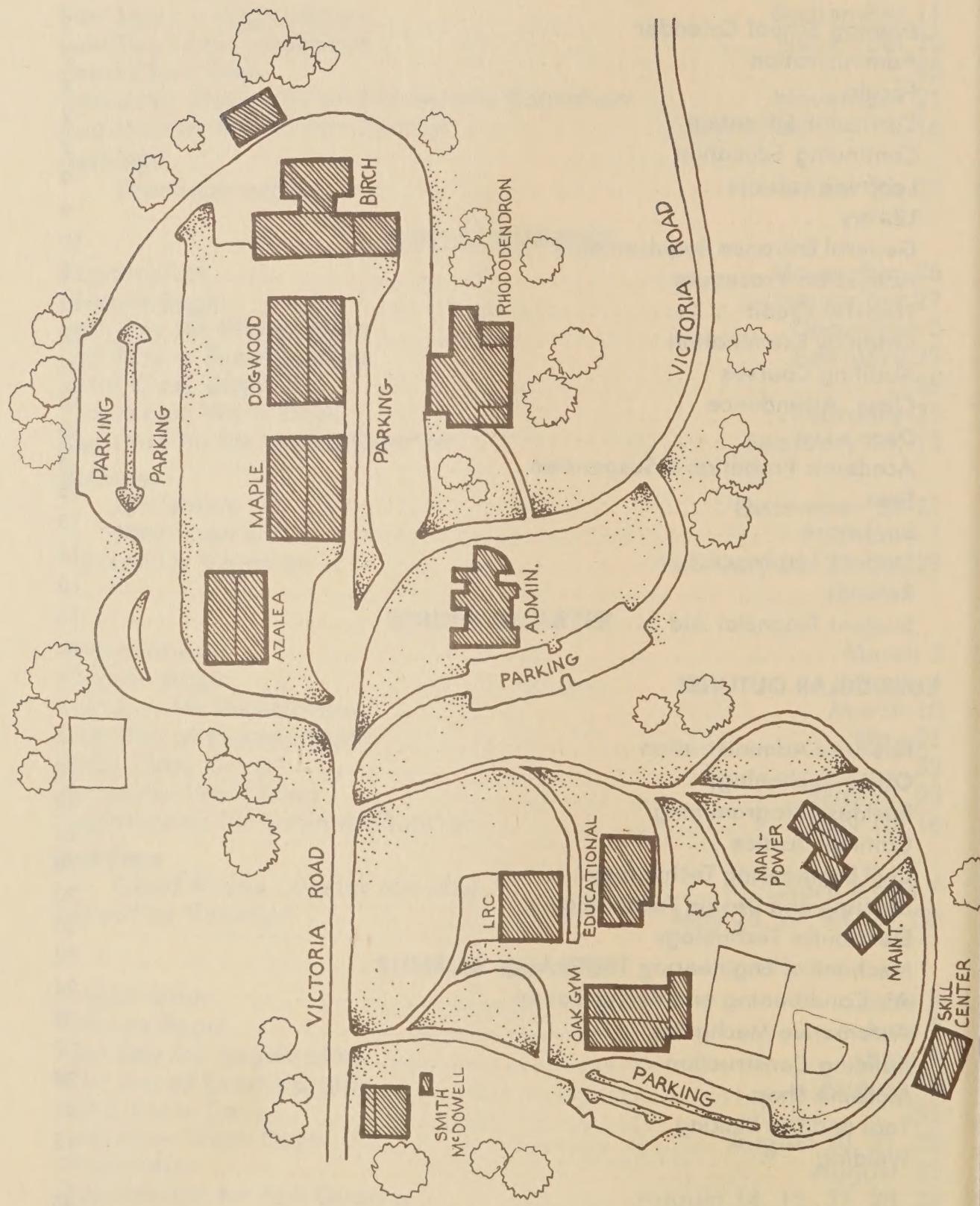
GENERAL INFORMATION

	Page
Evening School Calendar	3
Administration	7
Faculty	7
Curricular Education	7
Continuing Education	7
Learning Lab	9
Library	9
General Entrance Requirements	10
Admission Procedure	11
Transfer Credit	12
Credit by Examination	12
Auditing Courses	13
Class Attendance	13
Dean's List	13
Academic Probation & Suspension	14
Fees	15
Bookstore	15
Student Insurance	16
Refunds	16
Student Financial Aid	16

CURRICULAR OUTLINES

Business Administration	17
Office Technology	20
Business Programming	22
Criminal Justice	24
Civil Engineering Technology	26
Drafting and Design Technology	28
Electronics Technology	30
Mechanical Engineering Technology	32
Air Conditioning and Refrigeration	34
Automotive Mechanics	38
Building Construction	37
Machine Shop	39
Tool and Die Making	41
Welding	42
COURSE DESCRIPTIONS	43

Enrollment will determine offering or continuing a curriculum.



ADMINISTRATION

Brewster C. Adams	Dean of Evening Programs
Frances Johnson	Registrar
James Drummond	Counselor Assistant
Peggy Kyle	Librarian
Paul Hensley	Veterans Service Officer
Carol Stone	Secretary
Kathy Lemieux	Accounting Clerk

FACULTY

Part-time evening instructors are employed on the basis of their knowledge of the specific subject they are to teach. Some are trained teachers, while some are selected because of the technical knowledge they have acquired through work in industry and/or training.

The State Board of Education policy permits some full-time day instructors to be employed to teach in the evening on a part-time basis depending on the need. Part-time personnel may change from quarter to quarter to allow for the necessary flexibility in scheduling courses.

EVENING CURRICULAR PROGRAMS

This bulletin is intended as a supplement to the regular catalog. Most of the same curricular classes offered in the day are offered on a part-time basis in the evening. Classes meet on campus Monday through Thursday evenings, starting at 6:30 P.M. Individually selected classes may be undertaken by "Special Schedule" or "Unclassified" students, providing the proper prerequisites have been adhered to.

Evening curricular classes qualify students for the same degree or diploma as full-time day classes. Students who enroll in these programs generally work at full-time jobs during the day.

CONTINUING EDUCATION

The concept of continuing education during the entire lifetime of the individual is made available by the adult education classes at Asheville-Buncombe Technical Institute. These include: vocational courses for pre-employment and on-the-job training; adult basic education classes for individuals desiring a higher educational level; a management development program for industrial and business personnel; hospitality education for the tourist, hotel-motel, and restaurant industry; a manpower development program for the unemployed and underemployed and a general adult and community services program to offer the general public a variety of avocational courses for personal enrichment.

All continuing education classes are non-curriculum, vary in length, are held wherever space is available, are conducted both day and evening, and are taught by instructors selected by the Dean and Directors of the continuing education program.

Any adult, eighteen years of age or older may enroll in these courses. Ex-

ception: Individuals sixteen years of age and older and not officially enrolled in public schools may register for adult basic education.

Usually, the only cost for these courses is a \$5.00 registration fee and in some, a certificate is issued by Asheville-Buncombe Technical Institute and the Department of Community Colleges.

Adult Basic Education

An important area in continuing education is that of adult basic education. The program is designed for any adult who has not completed an elementary or high school education. Free classes offer the opportunity to study basic reading and writing, English, reading comprehension, math, social studies, and science. The program can assist an adult in preparing to enter Adult High School or equivalency (GED) programs.

Classes usually meet two nights a week, and a person may enroll at any time.

All materials are designed for adults with emphasis on individual needs and interests. At all levels, instruction is closely related toward helping the student to better meet his adult responsibilities.

Continuous classes are held Monday and Wednesday evenings on campus and at various times throughout the Buncombe-Madison County area. Additional classes can be started in almost any location where a sufficient number of interested students can be assembled.

High School Equivalency

An adult who has not completed high school may take a series of General Educational Development (GED) tests. Upon attaining a passing score of 225 points with no single test score below 35, a High-School Equivalency Certificate will be awarded. This certificate is generally accepted on a basis equal to a high school diploma for employment, promotion, or further education.

The G.E.D. tests cover five broad areas: English expression, literature, mathematics, social studies, and natural science. They are administered at the Institute.

The following requirements must be met before taking the G.E.D. tests:

1. Minimum age: 19, or 18 if out of regular school at least six months.
2. Residence: current North Carolina resident.
3. Make application for tests on official blanks that are available at A-B Tech.
4. Cost: there is no cost for testing.
5. Have a valid vocational, educational, or other purpose in applying.
6. An appointment must be made through the Chief Examiner (Learning Lab).

Human Resources Development Program

The human resource development program of A.B.T.I. is designed to assist the unemployed individual obtain employment and to help the under-employed person find a better job. This is accomplished by eight weeks of instruction including adult basic education with emphasis on helping those who do not have a high school diploma obtain the G.E.D., and an equal amount of human resources development training to teach the trainee how to apply for a job, methods of keeping the job, how to communicate and cooperate with fellow employees, etc.

The trainees are selected, based on their needs, their sincerity, their work history, and their motivation and attitude. The applicant must be at least eighteen years of age, but young high school graduates are generally not accepted.

LEARNING RESOURCES CENTER

The Learning Resources Center (LRC) provides instructional support services through a variety of print and non-print materials, equipment, learning activities, and production capabilities. These services are available to faculty, students, and community patrons through four major areas, or components, under the leadership of the Director, Learning Resources.

The Learning Resources Center includes: THE LIBRARY, LEARNING LABORATORY, GUIDED STUDIES, and AUDIO-VISUAL SERVICES. Together, they provide information; guidance in locating and utilizing a wide range of resource materials; provide a variety of equipment to supplement classroom and laboratory/shop experiences; assist with independent study and research; and provide tutoring and individualized instruction to meet special learning needs.

THE LIBRARY: Under the direction of the Librarian, the Library makes available all of the LRC's collection of resource materials, both print and non-print. The major responsibility of the Library is to provide information services and assist the user with utilization of the collection. In addition, the Library provides a very attractive, well equipped facility for both scholarly and recreational reading and study.

HOURS: Monday-Friday	8:00 a.m.-4:30 p.m.
Monday-Thursday	5:30 p.m.-10:00 p.m.
Closed 4:30 p.m.-5:30 p.m. and week-ends	

AUDIO-VISUAL SERVICES: Audio-Visual services are provided by the Audio-Visual Technician and include production, materials, and equipment to support the instructional program and related activities. The LRC maintains an inventory of Audio-Visual equipment for loan to faculty and other authorized patrons.

THE LEARNING LABORATORY: The Learning Laboratory is an instructional component of the Learning Resources Center. It serves as the central focal point of instruction by providing a learning environment in which the student can be free to explore interests with a learning pace and manner specifically tailored to individual needs.

The purpose of the Learning Laboratory is to assist an individual toward reaching educational or a vocational objectives. Its services are designed to enrich curriculum and extension programs and to upgrade academic skills. Special emphasis is placed on helping the handicapped person.

The Learning Laboratory is also a GED Testing Center. The GED Test is administered once a week by appointment.

The Learning Laboratory is designed to help students:

1. increase their level of learning before entering a technical institute or college.
2. prepare for SAT, College admission exams, and CLEP.
3. prepare for the GED Test.
4. through the GED and Developmental Studies Programs for Veterans.
5. who need to fulfill entrance requirements for Associate Degree programs.
6. who need high school credit in algebra and geometry.
7. who wish to re-enter the business world or to change vocations.

A student may begin in the learning laboratory at any time. An instructor is always available to give assistance when needed and to determine if the student is making satisfactory progress.

Hours: Monday-Thursday	8:00 a.m.-9:15 p.m.
Friday	8:00 a.m.-4:00 p.m.

There is no charge for study or testing.

GUIDED STUDIES: This instructional component of the LRC provides students and prospective students with special counseling, assessment, tutoring and study skills in the basic subjects of Math, English and Reading. The major objective of this program is to help individuals experience success at levels which will lead to successful achievement in ABTI's curriculum programs.

Guided Studies personnel are skilled in assessment techniques in the areas of intelligence, academic achievement, personality development, vocational interests, and aptitudes. These services are available for individuals and groups enrolled in any program operated under the direction of Asheville-Buncombe Technical Institute.

Current schedules for Guided Studies personnel may be obtained by contacting any member of the LRC staff.

GENERAL ENTRANCE REQUIREMENTS

Asheville-Buncombe Technical Institute operates an "Open Door" admission policy. Any applicant who has completed high school, or who is eighteen years of age or older and has completed at least eight units of high school, may be admitted to the Institute.

Placement into a specific course of study is based upon standards which will help to assure the applicant success in that course of study. Those who do not yet possess the background required by the course of study of his choice may be enrolled in preparatory courses designed to provide this background.

Applicants should be in good health with no impairment of vision or other physical defect which would restrict his ability in a particular field of work. A complete physical examination may be required.

Educational background, interest, motivation, experience and aptitudes will be considered when an application is submitted to the Institute.

ADMISSION PROCEDURE

Persons wishing to enroll in a curriculum program at the Institute must complete the entire application process. This consists of the following steps:

1. Submit an application form.
2. Obtain transcripts of credits from all secondary & post-secondary schools attended.
3. Complete the battery of admission and placement tests administered by the Institute. Requests for test exemption by transfer or special students will be reviewed individually.
4. Have a personal interview with the student services staff or other member of the administrative staff.

Upon receipt of the completed application form the Institute will schedule a date for the test administration and notify the applicant by mail. Transcripts should be mailed from the school directly to the Institute on the transcript form in use by that school.

Upon completion of the above procedure, each applicant will receive written notification of the action taken.

EQUAL OPPORTUNITY STATEMENT

Asheville-Buncombe Technical Institute does not discriminate on the basis of sex, race, ethnic origin, age or handicap in the educational programs or activities which it operates. The Institute is required by Title IX of the Education Amendment of 1972 not to discriminate on the basis of sex, and by other Federal legislation not to discriminate on the basis of race or ethnic origin. The requirement not to discriminate in education programs and activities extends to employment in the institution and to admission to its programs. Inquiries concerning the application of Title IX and other Federal non-discrimination legislation to Asheville-Buncombe Technical Institute should be referred to:

Joseph B. Edwards, Jr., Director of Personnel
Room 204, Thomas W. Simpson Administration Building
Asheville-Buncombe Technical Institute
340 Victoria Road, Asheville, NC 28801
Telephone (704) 254-1921 Extension 123

GRADING SYSTEM

Notice will be given to all students who are failing at mid-term and final grades will be issued at the end of the term to all students. Students will be graded on the acquirement of technical skills, ability to work under supervision, interest in work, initiative, and the ability to apply related information.

Students enrolled in either the school of technology or the school of trades will be graded by the following system.

A	93-100	Excellent
B	86- 92	Above Average
C	78- 85	Average

D	70- 77	Passing
F	Below 70	Unsatisfactory
I	Incomplete	
X	Continuing	
WP	Withdrawal passing (official)	
WF	Withdrawal failing (official)	
W	Unofficial withdrawal	
Y	Audit	

I-Incomplete: Assigned when a student is unable to complete work or take a final examination because of illness or for other reasons over which the student has no control. An "incomplete" must be removed within the first six weeks of the next term. Otherwise, the grade becomes an "F".

X-Continuing: Assigned when a student is unable to complete his work within the current quarter because of class being scheduled for consecutive quarters or upon the discretion of the instructor to allow additional time for completion of work. No fixed time limit except that agreed upon between instructor and student. A "contract" of conditions for completion and time limit will be executed by the instructor and signed by both instructor and student.

WP-given when student OFFICIALLY WITHDRAWS and is passing his work at the time. This will not influence the quality point ratio.

WF-given when the student OFFICIALLY WITHDRAWS and is failing his work at the time. This will not influence the quality point ratio.

W-given when the student WITHDRAWS UNOFFICIALLY. This is processed as a grade of "F" and will influence the quality point ratio.

TRANSFER CREDIT

Asheville-Buncombe Technical Institute will accept credit for parallel work completed in other North Carolina Technical Institutes or Community Colleges and institutions accredited by a regional accrediting agency. Applicants who seek admission with advanced standing should make regular application and submit transcripts of work from other institutions. No credit will be granted for work below a "C" or the average grade given by the other institution.

CREDIT BY EXAMINATION

Students who can provide evidence that they may be proficient in a subject, may request credit by examination. A written request must be made to the proper Department Chairperson on a form obtained from the Registrar.

The examination may be oral, performance, written, or a combination of these methods. Students failing the examination may not repeat the examination and will be expected to obtain credit by taking the course.

To receive credit by examination, the score must be above average. The decision of the examining instructor will be final. No quality points will be awarded for credit by examination.

Because of specific requirements, credit for certain courses may not be received by proficiency examination. A list of courses that may not be challenged by examination is marked with an asterisk in the course description section of the catalog.

AUDITING COURSES

Students who wish to audit courses must register through regular registration procedures and must have approval of the department chairperson responsible for the particular courses. Audit students do not receive credit but must adhere to attendance regulations. An audit intention cannot be changed to credit course after the "add-drop" day nor can credit courses be changed to audit courses. Audit work cannot be used toward diploma or degree requirements. (Audit students will enter class after all curriculum students have been registered, precluding audit students from taking the place of curriculum students).

CLASS ATTENDANCE

Regular class attendance is expected of all students. Instructors will keep an accurate class attendance record, and these records will become part of the student's official record. Absences are a serious deterrent to good scholarship, and it is impossible to receive instruction, obtain knowledge, or gain skills when absent from class. Being late for class is also a serious interruption of instruction and continuous infraction cannot be permitted.

Absences may be permitted in the event of circumstances beyond the control of the student, or an official and approved school function. Students must inform each instructor if any of these occur. Each instructor will determine the validity of the reason for the absence.

It is the student's responsibility to contact each instructor for class and laboratory assignments missed. Arrangements must be made within twenty-four hours after returning to campus to make up work missed.

EXCESSIVE ABSENCES may result in the student being dropped from a class by the instructor. It is the instructor's prerogative to readmit the student. In the event an instructor denies readmission, the student has the right to appeal to the "Admissions Committee". The appeal must be initiated through Student Services within twenty-four hours of the instructor's denial. The student will remain in class until the hearing is conclusive.

IN THE EVENT that an instructor is not in class and arrangements have not been made, the class is dismissed after ten minutes. A roll must be signed by the students present and turned in to the Department Chairperson, Division Director, or Instructional Dean. Students enrolled in classes that meet for two or more hours and sign the roll and leave, must report to the classroom at the beginning of the second class hour. In the event that the instructor is not present for the second hour, the students again must sign the roll and leave. If the course is scheduled for more than two hours, students will not be required to report to the classroom after the second hour.

DEAN'S LIST

1. Only a full-time student is to be considered. (A full-time student is defined as a student enrolled in a curriculum program, carrying a minimum of 12 quarter hours in the day program, or the maximum number of hours allowed in the evening program.)
2. Student is to have minimum 3.50 quality point average to qualify for the quarter under consideration.
3. Failures, incompletes, and withdrawals, pass or fail, will eliminate a stu-

dent from this list for that particular quarter. Students receiving credit for a course by examination are not affected.

4. The list will be compiled by the Registrar, sent to the Department Chairperson, and the Vice President, Instructional Services, who will be responsible for final approval and publication in local and pertinent hometown newspapers.
5. This list will be published following every quarter in the Asheville papers and in the hometown papers of qualifying students. (Allowing sufficient time for paper work.)

ACADEMIC PROBATION AND SUSPENSION

1. A student will be placed on academic probation if the following average is not maintained:

END OF QUARTER	MINIMUM CUMULATIVE QUALITY POINT AVERAGE
1	1.50
2	1.75
3 and following	2.00

2. A student will be suspended from the program if the cumulative quality point average is below:
 - (a) the minimum requirement indicated above at the end of one quarter on probation.
 - (b) 1.50 after attempting a minimum of 30 hours. This regulation also applies to students who have not declared a major. A student may appeal to the Admissions Committee for readmission. Appeals must be made in writing within two school days of notice of suspension. After receipt of the appeal, the Admissions Committee must meet and act within three school days.
3. Students placed on probation or suspension will be informed and counseled by the following means:
 1. Department Chairperson identifies and counsels the student by the first day of classes.
 2. Student Services notifies the student in writing.
 3. Students are counseled by Student Services.

CONDITIONS OF PROBATION

In an effort to assist the student in his academic progress, the following conditions of probation have been developed:

1. A student who is placed on probation will not participate in extracurricular activities. Extracurricular activities shall consist of: (a) Student Government Officer (Elected); (b) Officers of Curriculum Clubs; (c) Yearbook Officers; (d) Off-Campus Activities That Require Missing More Than One Class Day in Succession; (e) Activities in Which the Student Officially Represents the Institute.
2. A student on probation will not participate in the Institute's intercollegiate athletic program.
3. The Department Chairperson will require a reduced course load and must approve the course schedule for the following quarter. Exceptions require the written approval of the Department Chairperson.

4. Academic progress must be reviewed with the Department Chairperson at mid-quarter.

CONDITIONS OF SUSPENSION

For those students who have not maintained satisfactory progress in their current curriculum, the following conditions of suspension apply:

1. Suspension from the curriculum is for a minimum of one quarter. This condition also applies to students who have not declared a major.
2. A suspended student may be referred to the Learning Laboratory for basic academic preparation.
3. A student suspended from one curriculum may apply for another curriculum. Admission requirements of the "new" curriculum must be met and permission of its Department Chairperson granted.
4. A student suspended from a curriculum may apply to re-enter the same curriculum and will be considered as a new applicant.

TUITION

ADVANCE REGISTRATION\$15.00

Required of all full-time day students and full curriculum evening students as a condition of acceptance and enrollment. (This fee is credited to the fall quarter tuition payment).

Full-time Fee	\$39.00
Non-Resident of N.C. (12 or more credit hours)	\$198.00
Part-time per credit hour per quarter	\$ 3.25
Non Resident of N. C. (less than 12 credit hours).....	\$16.50
There are no fees for senior citizens 65 years of age or older.	
LATE REGISTRATION FEE	\$ 5.00
STUDENT ACTIVITY FEE.....	\$ 7.00
Full curriculum evening students, per year	

ADDITIONAL COSTS

Students taking drafting courses should anticipate an instrument and equipment cost of \$15.00 to \$40.00 at the beginning of their first drafting course.

It is recommended that students enrolling in the Business Division, Technical Division and some Departments of the Vocational Division purchase a small electronic calculator. Students should consult with their Department Chairperson or a member of the Math Department prior to the purchase of a calculator. Calculators will not be permitted in MAT 100, MAT 105 or MAT 1101.

In addition to books, vocational students will be required to buy certain tools and uniforms for use in their shop classes. The instructor will provide a list of the required items plus the approximate cost the first night his class meets.

BOOKSTORE

A bookstore is operated by the Institute for the convenience of students and staff members to provide required textbooks and materials. Students should plan to purchase all texts & materials at the beginning of each quarter.

Textbook costs vary considerably depending upon the curriculum and quarter. Book costs also vary from year to year because of changes in curriculum, book prices, texts & material requirements.

Candidates for graduation are required to pay a graduation fee before attending graduation exercises in August. Graduation fees and cap and gown orders are collected by the bookstore in May. Graduation invitations are also available in the bookstore.

STUDENT INSURANCE

Certain risks are inherent in any work involving regular contact with mechanical and electrical equipment. While stringent precautions will be taken to insure safety, it is felt to be in the interest of all students to provide some measure of insurance protection.

A group policy, providing the desired insurance protection, will be maintained in effect by the Institute and all students will be REQUIRED to subscribe to such coverage. The cost of accident insurance to the student will be approximately \$3.50 per year.

REFUNDS

Refunds amounting to two-thirds of the initial tuition payment may be requested if a student has official withdrawal during the first 10 calendar days of the quarter. No refunds will be made to students who withdraw without authority or who are dismissed for cause.

STUDENT FINANCIAL AID

The purpose of the financial aid program at Asheville-Buncombe Technical Institute (ABTI) is designed primarily to provide assistance to students who, without such aid, would be unable to attend the Institute. The program is committed to the philosophy that no eligible student should be denied access to a higher education because of a lack of financial resources.

Students desiring additional information about the Financial Aid Program at ABTI are urged to write or phone: Director of Financial Aid, Asheville-Buncombe Technical Institute, 340 Victoria Road, Asheville, N. C. 28801, 704/254-1921 Ext. 144.

BUSINESS ADMINISTRATION
Associate in Applied Science Degree

Each student will be assigned an advisor and will be counseled prior to preregistration. Electives will be offered based upon results from demand surveys conducted early in the previous quarter. The student must have departmental approval of his/her schedule prior to registration.

The AAS degree in Business Administration will be awarded to a student meeting Institute requirements and completing required courses plus a minimum of eight (8) elective courses from a combination of the concentrations listed below.

For students wishing to concentrate in a specific area the Business Administration Department suggests the following electives. If a student chooses the designated courses in one concentration, the degree will reflect this achievement.

Accounting		Banking & Finance		Industrial Management		Marketing		Postal Service Management (Evening Only)	
*BUS	122	BUS	122	*BUS	249	*BUS	206	*PSM	100
BUS	206	*BUS	125	*ISC	102	BUS	208	*PSM	105
BUS	208	*BUS	206	*ISC	202	*BUS	237	*PSM	200
*BUS	223	*BUS	207	*ISC	203	*BUS	238	*PSM	201
*BUS	225	*BUS	208	*ISC	209	*BUS	240	*PSM	202
*BUS	226	*BUS	209	*ISC	211	BUS	247	*PSM	203
*BUS	230	*BUS	238	MAT	214	*BUS	248	*PSM	205
*BUS	269	BUS	247			BUS	249	*PSM	206
MAT	214	BUS	248			*BUS	266		
		MAT	214			ECO	107		
						MAT	214		

*Designated Courses

BUSINESS ADMINISTRATION
Associate in Applied Science Degree

			Hrs. Per Week	Credit Hrs.
			Class	Lab
FIRST QUARTER				
BUS	101	Introduction to Business	3	2
MAT	105	Introduction to Algebra	3	0
MAT	110.1	Business Mathematics I	1	0
ENG	100	Reading Comprehension	1	2
			8	4
				10
SECOND QUARTER				
BUS	110	Business Machines	1	3
ECO	102	Economics I	3	0
MAT	110.2	Business Mathematics I	4	0
ENG	101	Fundamentals of English	3	0
			11	3
				12
THIRD QUARTER				
BUS	120	Accounting I	5	2
ECO	104	Economics II	3	0
ENG	102	Composition	3	0
			11	2
				12

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
FOURTH QUARTER					
BUS	121	Accounting II	5	2	6
MAT	112	Mathematics of Finance	3	2	4
			8	4	10
FIFTH QUARTER					
BUS	123	Finance I	5	0	5
BUS	125	Bank Fundamentals	5	0	5
			10	0	10
SIXTH QUARTER					
BUS	239	Introduction to Marketing	5	0	5
BUS	115	Business Law I	3	0	3
ENG	204	Oral Communications	3	0	3
			11	0	11
SEVENTH QUARTER					
BUS	116	Business Law II	3	0	3
BUS	234	Introduction To Management	3	2	4
ENG	206	Business Communications	3	0	3
			9	2	10
EIGHTH QUARTER					
BUS	229	Taxes	3	2	4
ENG	103	Report Writing	3	0	3
PSY	206	Applied Psychology	3	0	3
			9	2	10
NINTH QUARTER					
BUS	233	Personnel Management & Supervision	5	0	5
BUS	247	Insurance	5	0	5
			10	0	10
TENTH QUARTER					
EDP	104	Introduction to Business Data Processing	2	2	3
Elective (3 nights)					
ELEVENTH QUARTER					
EDP	106	Applied Business Data Processing	1	4	3
Elective (2 nights)					

The determinant for graduation will be the successful completion of the required number of courses and electives.

In addition to the above, at least eight (8) of the following electives must be successfully completed before a student can graduate from the Business Administration Curriculum:

ELECTIVES

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
BUS	122	Accounting III	5	2	6
BUS	206	Banking & Finance Credit	5	0	5
BUS	207	Principles of Bank Operations	3	2	4
BUS	208	Financial Statements Analysis	3	2	4
BUS	209	Banking Services	3	2	4
BUS	223	Intermediate Accounting	5	0	5
BUS	225	Cost Accounting I	5	2	4
BUS	226	Cost Accounting II	5	0	5
BUS	230	Taxes II	3	2	4
BUS	231	Government & Business	3	0	3
BUS	235	Business Organization and Management	3	2	4
BUS	236	Small Business Management	3	0	3
BUS	237	Advertising	5	0	5
BUS	238	Consumer Behavior	3	2	4
BUS	240	Channels of Distribution	5	0	5
BUS	248	Marketing Research	5	0	5
BUS	249	Inventory Control	5	0	5
BUS	266	Professional Sales Techniques	3	0	3
BUS	269	Auditing	3	2	4
BUS	297	Real Estate Fundamentals	5	0	5
ECO	107	Consumer Economics	3	0	3
ISC	102	Industrial Safety	3	0	3
ISC	202	Quality Control	3	2	4
ISC	203	Time and Motion Study	3	2	4
ISC	209	Plant Layout	3	2	4
ISC	211	Work Measurement	3	2	4
MAT	214	Statistics	5	0	5
OTC	101	Basic Typewriting	2	3	3
PSM	100	Postal Service History and Organization	3	0	3
PSM	105	Mail Processing II	2	4	4
PSM	200	Postal Service Labor Management	3	0	3
PSM	201	Postal Service Support	2	4	4
PSM	202	Postal Employee Services	3	2	4
PSM	203	Postal Customer Service	2	4	4
PSM	205	Postal Delivery and Collection	2	4	4
PSM	206	Postal Problems Analysis	2	4	4
SOC	201	Sociology	3	0	3

OFFICE TECHNOLOGY
Technical Diploma

			Hrs. Per Week		Credit
			Class	Lab	Hrs.
FIRST QUARTER					
OTC	101	Basic Typewriting	2	3	3
*OTC	116	Filing	5	0	5
*ENG	111	Grammar	5	0	5
			12	3	13
SECOND QUARTER					
OTC	103	Advanced Typewriting	2	3	3
OTC	100	Spelling Punctuation Study	3	0	3
**ENG	100	Reading Comprehension	1	2	2
			6	5	8
THIRD QUARTER					
OTC	105	Expert Typewriting	2	3	3
OTC	272	Vocabulary Building	2	0	2
MAT	108	Business Arithmetic	5	0	5
			9	3	10
FOURTH QUARTER					
OTC	110	Practical Office English	3	0	3
OTC	205	Professional Typewriting	2	3	3
BUS	110	Business Machines	1	3	2
			6	6	8
FIFTH QUARTER					
OTC	211	Typing Office Practice	2	3	3
BUS	100	Contemporary Business	3	2	4
			5	5	7
SIXTH QUARTER					
†OTC	111	Office Machines	2	2	3
OTC	113	Personality Development	3	0	3
ENG	102	Composition	3	0	3
			8	2	9
SEVENTH QUARTER					
OTC	214	Machine Transcription	2	3	3
*BUS	117	Accounting, Clerical	5	2	6
			7	5	9
EIGHTH QUARTER					
OTC	213	Office Procedures	3	2	4
*BUS	118	Accounting, Clerical	5	2	6
			8	4	10

			Hrs. Per Week		Credit
			Class	Lab	Hrs.
NINTH QUARTER					
*BUS	119	Accounting, Clerical	5	2	6
ENG	204	Oral Communications	3	0	3
PSY	1101	Human Relations	3	0	3
			11	2	12
TENTH QUARTER					
OTC	216	Payroll Procedures	5	0	5
EDP	104	Introduction to Data Processing	2	2	3
			7	2	8
ELEVENTH QUARTER					
*ECO	108	Consumer Economics	5	0	5
ENG	205	Written Communications	5	0	5
			10	0	10
#OTC	218	Cooperative or Supervised Education	0	15	5
#OTC	220	Seminar on Cooperative Education	2	0	2

*BUS 120 & 121 may be substituted for BUS 117, 118, & 119

*ECO 105 may be substituted for ECO 108

*ENG 101 may be substituted for ENG 111

*PSY 206 may be substituted for PSY 1101

*SSC 112 may be substituted for OTC 116

*SSC 127 may be substituted for OTC 100

†SSC courses with similar digits, course titles and subject matter may be substituted for OTC courses with department chairperson's permission.

‡Subject to departmental guidelines, appropriate work experience may be used in lieu of OTC 218 and OTC 220. Evening students must take these courses through the day program or meet the work experience requirement.

BUSINESS PROGRAMMING
Associate in Applied Science Degree
(Offered Even Years)

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
FIRST QUARTER					
EDP	104	Introduction to Business Data Processing	2	2	3
MAT	100	Basic Mathematics	5	0	5
ENG	100	Reading Comprehension	1	2	2
			8	4	10
SECOND QUARTER					
EDP	107	Introduction to S/360-370 (DOS)	3	2	4
MAT	101	Algebra & Trigonometry I	5	0	5
			8	2	9
THIRD QUARTER					
EDP	108	Business Programming (BAL)	3	2	4
MAT	102	Algebra and Trigonometry II	5	0	5
			8	2	9
FOURTH QUARTER					
EDP	109	Systems and Procedures (BAL)	2	3	3
MAT	214	Statistics	5	0	5
			7	3	8
FIFTH QUARTER					
EDP	118	Data Base Management Concepts	3	2	4
BUS	101	Introduction To Business	3	2	4
			6	4	8
SIXTH QUARTER					
EDP	205	Scientific Programming (Fortran IV)	3	2	4
ECO	102	Economics I	3	0	3
PSY	206	Applied Psychology	3	0	3
			9	2	10
SEVENTH QUARTER					
EDP	206	Systems and Procedure (Fortran IV)	2	3	3
ECO	107	Consumer Economics	3	0	3
ENG	101	Fundamentals of English	3	0	3
			8	3	9
EIGHTH QUARTER					
EDP	218	Business Programming (RPG)	3	2	4
ENG	102	Composition	3	0	3
ENG	204	Oral Communication	3	0	3
			9	2	10

			Hrs. Per Week	Credit Hrs.
			Class	Lab
NINTH QUARTER				
EDP	219	Systems and Procedures (RPG)	2	3
MAT	112	Mathematics of Finance	3	2
			5	5
				7
TENTH QUARTER				
EDP	215	Business Programming (COBOL)	3	2
BUS	120	Accounting I	5	2
			8	4
				10
ELEVENTH QUARTER				
EDP	216	Systems and Procedures (COBOL)	2	3
BUS	121	Accounting II	5	2
			7	5
				9
TWELFTH QUARTER				
EDP	220	Systems Analysis and Design	2	3
BUS	225	Cost Accounting I	5	0
			7	3
				8
THIRTEENTH QUARTER				
EDP	217	Business Programming (Advanced COBOL)	2	3
BUS	235	Business Organization and Management	3	2
			5	5
				7
FOURTEENTH QUARTER				
EDP	221	Advanced Projects (COBOL)	2	3
BUS	233	Personnel Management and Supervision	5	0
			7	3
				8
FIFTEENTH QUARTER				
ENG	103	Report Writing	3	0
				3

CRIMINAL JUSTICE
LAW ENFORCEMENT TECHNOLOGY
Associate in Applied Science Degree

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
FIRST QUARTER					
CJC	101	Introduction to Criminal Justice	5	0	5
ENG	100	Reading Comprehension	1	2	2
PSY	101	Introduction to Psychology	3	0	3
			9	2	10
SECOND QUARTER					
CJC	102	Introduction to Criminology	5	0	5
ENG	101	Fundamentals of English	3	0	3
POL	103	State and Local Government	4	0	4
			12	0	12
THIRD QUARTER					
CJC	115	Criminal Law I	3	0	3
EMS	101	Emergency Medical Services	2	2	3
ENG	102	Composition	3	0	3
PSY	203	Abnormal Psychology	3	0	3
			11	2	12
FOURTH QUARTER					
CJC	205	Criminal Evidence	4	0	4
CJC	216	Criminal Law II	3	0	3
MAT	100	Basic Mathematics	5	0	5
			12	0	12
FIFTH QUARTER					
CJC	201	Motor Vehicle Law	3	0	3
CJC	210	Criminal Investigation I	4	0	4
ENG	204	Oral Communication	3	0	3
PHO	201	Introduction to Photography	1	2	2
			11	2	12
SIXTH QUARTER					
CJC	211	Introduction to Criminalistics	4	2	5
CJC	213	Criminal Investigation II	4	0	4
PSY	151	Applied Psychology for Law Enforcement	3	0	3
			11	2	12
SEVENTH QUARTER					
CJC	125	Judicial Process	4	0	4
CJC	200	Crime Prevention	3	0	3
CJC	110	Introduction to Juvenile Justice	5	0	5
			12	0	12

			Hrs. Per Week	Credit Hrs.
			Class	Lab
EIGHTH QUARTER				
CJC	202	Traffic Planning and Management	3	2
CJC	217	Patrol Procedures	3	0
SOC	201	Sociology	3	0
			9	2
				10

			Hrs. Per Week	Credit Hrs.
			Class	Lab
NINTH QUARTER				
CJC	212	Narcotics, Drugs, and Human Behavior	3	2
CJC	220	Police Organization, Administration, and Supervision	5	0
			8	2
				9

			Hrs. Per Week	Credit Hrs.
			Class	Lab
TENTH QUARTER				
CJC	206	Community Relations	3	0
EDP	104	Introduction to Data Processing	2	2
ENG	103	Report Writing	3	0
			8	2
				9

			Hrs. Per Week	Credit Hrs.
			Class	Lab
ELEVENTH QUARTER				
Approved Electives				8
TWELFTH QUARTER				
Approved Electives				8

ELECTIVES

In addition to required courses, students must complete a minimum of 16 credit hours of approved electives. These may be taken at any time during the program. However, the last two quarters are reserved for electives.

Electives will be offered on the basis of results from demand surveys conducted early in the previous quarter. The student must have departmental approval of his/her schedule prior to registration.

		Possible Electives	Hrs. Per Week	Credit Hrs.
			Class	Lab
BIO	101	Human Anatomy & Physiology I	4	3
BIO	111	Basic Life Sciences	4	3
BUS	110	Business Machines	1	3
CHM	100	Introduction to Chemistry	3	3
CHM	101	Fundamentals of Physiological Chemistry	3	2
ECO	107	Consumer Economics	3	0
MAT	101	Algebra and Trigonometry I	5	0
MAT	214	Statistics	5	0
PED	130	Beginner Physical Fitness	0	3
PED	131	Intermediate Physical Fitness	0	3
SSC	101	or OTC 101 Basic Typewriting	2	3

CIVIL ENGINEERING TECHNOLOGY
Associate in Applied Science Degree
(Offered odd years)

			Hrs. Per Week	Credit Hrs.
			Class	Lab
FIRST QUARTER				
CIV	217	Construction Methods and Equipment	4	4
MAT	100	Basic Mathematics	5	0
			9	4
				11
SECOND QUARTER				
CIV	220	Construction Planning	4	0
MAT	101	Algebra and Trigonometry I	5	0
PSY	206	Applied Psychology	3	0
			12	0
				12
THIRD QUARTER				
DFT	101	Drafting	2	4
MAT	102	Algebra and Trigonometry II	5	0
			7	4
				9
FOURTH QUARTER				
CIV	101	Surveying	2	6
DFT	104	Civil Drafting	2	4
			4	10
				8
FIFTH QUARTER				
CIV	102	Surveying	2	6
*MAT	103	Analytical Geometry and Calculus I	5	0
			7	6
				9
SIXTH QUARTER				
CIV	114	Statics	5	0
PHY	101	Properties of Matter	3	2
			8	2
				9
SEVENTH QUARTER				
CIV	216	Strength of Materials	5	0
CIV	228	Engineering Relations and Ethics	2	0
PHY	102	Mechanics	3	2
			10	2
				11
EIGHTH QUARTER				
CIV	103	Surveying	2	6
PHY	103	Electricity	3	2
			5	8
				8

			Hrs. Per Week	Credit Hrs.
			Class	Lab
NINTH QUARTER				
CIV	218	Plain and Reinforced Concrete	4	4
CIV	202	Properties of Soils	2	2
SOC	201	Sociology	3	0
			9	6
				12
TENTH QUARTER				
CIV	221	Asphalt	2	2
EDP	105	Introduction to Scientific Data Processing	2	2
ENG	101	Fundamentals of English	3	0
			7	4
				9
ELEVENTH QUARTER				
CIV	225	Estimates, Codes and Specifications	4	4
CIV	229	Branches of Civil Engineering Technology	3	0
ENG	102	Composition	3	0
			10	4
				12
TWELFTH QUARTER				
CIV	204	Surveying	2	6
CIV	227	Construction of Highways	4	0
ENG	103	Report Writing	3	0
			9	6
				11
THIRTEENTH QUARTER				
CIV	219	Steel and Timber Construction	4	4
ENG	204	Oral Communications	3	0
			7	4
				9

*MAT 204 may be substituted for MAT 103.

DRAFTING AND DESIGN TECHNOLOGY
Associate in Applied Science Degree

			Hrs. Per Week	Credit Hrs.
			Class	Lab
FIRST QUARTER				
DFT	101	Drafting	2	4
MAT	100	Basic Mathematics	5	0
			7	4
				9
SECOND QUARTER				
DFT	102	Drafting	2	4
MAT	101	Algebra & Trigonometry I	5	0
			7	4
				9
THIRD QUARTER				
DFT	204	Descriptive Geometry	2	6
MAT	102	Algebra & Trigonometry II	5	0
			7	6
				9
FOURTH QUARTER				
PHY	101	Properties of Matter	3	2
MAT	204	Applied Mathematics	5	0
			8	2
				9
FIFTH QUARTER				
MEC	210	Basic Physical Metallurgy	3	3
PHY	102	Mechanics	3	2
			6	5
				8
SIXTH QUARTER				
MEC	105	Statics	5	0
PHY	103	Electricity	3	2
			8	2
				9
SEVENTH QUARTER				
MEC	101	Machine Processes	2	4
MEC	205	Strength of Materials	5	0
			7	4
				9
EIGHTH QUARTER				
MEC	111	Manufacturing Processes	3	3
MEC	235	Hydraulics & Pneumatics	3	3
			6	6
				8
NINTH QUARTER				
DFT	103	Drafting	2	4
ENG	101	Fundamentals of English	3	0
PSY	206	Applied Psychology	3	0
			8	4
				10

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
TENTH QUARTER					
DFT	201	Design Drafting I	2	6	4
ENG	102	Composition	3	0	3
SOC	201	Sociology	3	0	3
			8	6	10
ELEVENTH QUARTER					
DFT	205	Design Drafting II	2	6	4
ENG	103	Report Writing	3	0	3
EDP	105	Introduction to Scientific Data Processing	2	2	3
			7	8	10
TWELFTH QUARTER					
DFT	211	Mechanisms & Kinematics			
		Design	2	6	4
ENG	204	Oral Communications	3	0	3
			5	6	7
THIRTEENTH QUARTER					
DFT	212	Jig and Fixture Design	2	6	4
ELC	201	Electrical Machinery	3	0	3
			5	6	7
FOURTEENTH QUARTER					
DFT	242	Architectural Drafting	2	6	4
DFT	206	Design Drafting III	2	6	4
			4	12	8

ELECTRONICS TECHNOLOGY
Associate in Applied Science Degree

			Hrs. Per Week	Credit Hrs.
			Class	Lab
FIRST QUARTER				
ELN 101	Fundamentals of D. C.		4	4
MAT 100	Basic Mathematics		5	0
			9	4
				11
SECOND QUARTER				
ELN 102	Fundamentals of A. C.		4	4
MAT 101	Algebra and Trigonometry I		5	0
			9	4
				11
THIRD QUARTER				
ELN 104	Vacuum Tube Network Analysis		4	4
MAT 102	Algebra and Trigonometry II		5	0
			9	4
				11
FOURTH QUARTER				
CHM 106	Engineering Chemistry		3	2
MAT 103	Analytical Geometry and Calculus I		5	0
			8	2
				9
FIFTH QUARTER				
ELN 106	Introduction to Solid State Devices		4	4
MAT 121	(4 weeks) Numbering Sys- tems and Boolean Algebra		3	0
MAT 201	(7 weeks) Calculus II		5	0
			12	4
				14
SIXTH QUARTER				
ELN 207	Transistor Amplifier Analysis		4	4
ENG 100	Reading Comprehension		1	2
PSY 206	Applied Psychology		3	0
			8	6
				11
SEVENTH QUARTER				
ELN 209	Circuit Analysis		4	4
ENG 101	Fundamentals of English		3	0
SOC 201	Sociology		3	0
			10	4
				12
EIGHTH QUARTER				
ELN 217	Introduction to Special Devices		4	4
EDP 105	Introduction To Scientific Data Processing		2	2
ENG 102	Composition		3	0
			9	6
				12

			Hrs. Per Week	Class	Lab	Credit Hrs.
NINTH QUARTER						
ELN	211	Logic Circuits	4		4	6
PHY	101	Properties of Matter	3		2	4
			7		6	10
TENTH QUARTER						
ELN	213	Waveshaping and Pulse Circuits	4		4	6
PHY	102	Mechanics	3		2	4
			7		6	10
ELEVENTH QUARTER						
ELN	219	Industrial Instrumentation	4		4	6
PHY	104	Light & Sound	3		2	4
			7		6	10
TWELFTH QUARTER						
ELN	221	Electronic Circuit Design	4		4	6
DFT	109	Electronic Drafting	1		5	3
			5		9	9
THIRTEENTH QUARTER						
ELN	214	Microprocessors	4		4	6
ENG	103	Report Writing	3		0	3
ENG	204	Oral Communication	3		0	3
			10		4	12

MECHANICAL ENGINEERING TECHNOLOGY
Associate in Applied Science Degree

			Hrs. Per Week		Credit Hrs.
			Class	Lab	
FIRST QUARTER					
DFT	101	Drafting	2	4	4
MAT	100	Basic Mathematics	5	0	5
			7	4	9
SECOND QUARTER					
DFT	102	Drafting	2	4	4
MAT	101	Algebra & Trigonometry I	5	0	5
			7	4	9
THIRD QUARTER					
DFT	204	Descriptive Geometry	2	6	4
MAT	102	Algebra & Trigonometry II	5	0	5
			7	6	9
FOURTH QUARTER					
PHY	101	Properties of Matter	3	2	4
MAT	103	Analytical Geometry & Calculus I	5	0	5
			8	2	9
FIFTH QUARTER					
MEC	210	Physical Metallurgy	3	3	4
PHY	102	Mechanics	3	2	4
			6	5	8
SIXTH QUARTER					
MEC	105	Statics	5	0	5
PHY	103	Electricity	3	2	4
			8	2	9
SEVENTH QUARTER					
MEC	101	Machine Processes	2	4	4
MEC	205	Strength of Materials	5	0	5
			7	4	9
EIGHTH QUARTER					
MEC	111	Manufacturing Processes	3	3	4
MEC	235	Hydraulics & Pneumatics	3	3	4
			6	6	8
NINTH QUARTER					
CHM	102	Engineering Chemistry	3	2	4
ENG	101	Fundamentals of English	3	0	3
PSY	206	Applied Psychology	3	0	3
			9	2	10

		Hrs. Per Week	Credit	
		Class	Lab	Hrs.

TENTH QUARTER

ELC	205	Applied Electricity	2	4	4
ENG	102	Composition	3	0	3
SOC	201	Sociology	3	0	3
			8	4	10

ELEVENTH QUARTER

BUS	101	Introduction to Business	3	2	4
ENG	103	Report Writing	3	0	3
EDP	105	Introduction to Scientific Data Processing	2	2	3
			8	4	10

TWELFTH QUARTER

ISC	102	Industrial Safety	3	0	3
MEC	208	Machine Design I	4	0	4
ENG	204	Oral Communication	3	0	3
			10	0	10

THIRTEENTH QUARTER

MEC	209	Machine Design II	4	0	4
MEC	220	Power Systems	3	0	3
MEC	206	Dynamics	3	0	3
MEC	212	Practical Automation	3	0	3
			13	0	13

AIR CONDITIONING AND REFRIGERATION

Diploma

			Hrs. Per Week	Credit Hrs.
			Class Lab Shop	
FIRST QUARTER				
AHR	1121.1	Fundamentals of Refrigeration: Domestic	2 0 6	4
MAT	1101.1	Fundamentals of Mathematics	4 0 0	4
ELC	1117.1	Basic Electricity	2 2 0	3
			<hr/>	<hr/>
			8 2 6	11
SECOND QUARTER				
AHR	1121.2	Fundamentals of Refrigeration: Domestic	1 0 6	3
MAT	1101.2	Fundamentals of Mathematics	1 0 0	1
MAT	1103	Geometry	3 0 0	3
BPR	1108	Basic Mechanical Blueprint Reading	0 3 0	1
			<hr/>	<hr/>
			5 3 6	8
THIRD QUARTER				
AHR	1122.1	Fundamentals of Refrigeration: Domestic	2 0 6	4
WLD	1101	Basic Welding	1 2 0	2
BPR	1116	Blueprint Reading: Air Conditioning	1 3 0	2
			<hr/>	<hr/>
			4 5 6	8
FOURTH QUARTER				
AHR	1122.2	Fundamentals of Refrigeration: Commercial	1 0 6	3
PHY	1101	Applied Science I	3 2 0	4
ELC	1117.2	Basic Electricity	1 0 0	1
ELC	1118.1	Applied Electricity	1 0 0	1
			<hr/>	<hr/>
			6 2 6	9
FIFTH QUARTER				
AHR	1123.1	Principles of Air Conditioning	3 0 3	4
ENG	100	Reading Comprehension	1 2 0	2
PSY	1101	Human Relations	3 0 0	3
			<hr/>	<hr/>
			7 2 3	9
SIXTH QUARTER				
AHR	1123.2	Principles of Air Conditioning	1 0 6	3
AHR	1124.1	Principles of Heating: Fuels & Burners	1 0 0	1
ENG	1102	Communication Skills	3 0 0	3
ELC	1118.2	Applied Electricity	2 2 0	3
			<hr/>	<hr/>
			7 2 6	10

Hrs. Per Week		Credit			
		Class	Lab	Shop	Hrs.
AHR 1124.2	Principles of Heating: Fuels & Burners	2	0	6	4
AHR 1127	Duct Construction and Maintenance	3	0	6	5
		5	0	12	9

SEVENTH QUARTER

AHR 1124.2	Principles of Heating: Fuels & Burners	2	0	6	4
AHR 1127	Duct Construction and Maintenance	3	0	6	5
		5	0	12	9

EIGHTH QUARTER

AHR 1126	All Year Comfort Systems and A.C. Servicing	4	0	9	7
BUS 1103.2	Small Business Operations	3	0	0	3
		7	0	9	10

BUILDING CONSTRUCTION

**Diploma
(Even Years)**

FIRST QUARTER

				Hrs. Per Week		Credit
			Class	Lab	Shop	Hrs.
CAR	1102.1	Cabinetmaking I	3	0	9	6
BPR	1107	Blueprint Reading-Construction Trades	0	3	0	1
			4	3	9	7

SECOND QUARTER

CAR	1102.2	Cabinetmaking I	2	0	6	4
ENG	100	Reading Comprehension	1	2	0	2
PSY	1101	Human Relations	3	0	0	3
			5	2	6	7

THIRD QUARTER

CAR	1104	Cabinetmaking II	0	0	9	3
ENG	1102	Communication Skills	3	0	0	3
			3	0	9	6

FOURTH QUARTER

CAR	1105.1	Supervised Work Experience	1	0	12	5
BUS	1103	Small Business Operations	3	0	0	3
			4	0	12	8

FIFTH QUARTER

CAR	1101.1	Carpentry I	3	0	9	6
MAT	1101.1	Fundamentals of Mathematics	4	0	0	4
			7	0	9	10

SIXTH QUARTER

CAR	1101.2	Carpentry I	2	0	6	4
BPR	1109	Blueprint Reading-Construction Trades	0	3	0	1
MAT	1101.2	Fundamentals of Mathematics	1	0	0	1
MAT	1103	Geometry	3	0	0	3
			6	3	6	9

SEVENTH QUARTER

CAR	1103	Carpentry II	0	0	12	4
DFT	1127	Construction Trades-Drafting I	2	4	0	4
			2	4	12	8

EIGHTH QUARTER

CAR	1105.2	Supervised Work Experience	1	0	12	5
DFT	1128	Construction Trades-Drafting II	0	3	0	1
			1	3	12	6

BUILDING CONSTRUCTION
Diploma
(Odd Years)

			Hrs.	Per Week	Credit	
			Class	Lab	Shop	Hrs.
FIRST QUARTER						
CAR	1101.1	Carpentry I	2	0	6	4
BPR	1107	Blueprint Reading-Construction Trades	0	3	0	1
MAT	1101.1	Fundamentals of Mathematics	4	0	0	4
			6	3	6	9
SECOND QUARTER						
CAR	1101.2	Carpentry I	2	0	6	4
MAT	1101.2	Fundamentals of Mathematics	1	0	0	1
MAT	1103	Geometry	3	0	0	3
BPR	1109	Blueprint Reading-Construction Trades	0	3	0	1
			6	3	6	9
THIRD QUARTER						
CAR	1103	Carpentry II	0	0	12	4
DFT	1127	Construction Trades-Drafting I	2	4	0	4
			2	4	12	8
FOURTH QUARTER						
CAR	1105.1	Supervised Work Experience	1	0	12	5
DFT	1128	Construction Grades-Drafting II	0	3	0	1
			1	3	12	6
FIFTH QUARTER						
CAR	1102.1	Cabinetmaking I	3	0	9	6
CAR	1101.3	Carpentry I	1	0	3	2
			4	0	12	8
SIXTH QUARTER						
CAR	1102.2	Cabinetmaking I	2	0	6	4
ENG	100	Reading Comprehension	1	2	0	2
PSY	1101	Human Relations	3	0	0	3
			6	2	6	9
SEVENTH QUARTER						
CAR	1104	Cabinetmaking II	0	0	9	3
ENG	1102	Communication Skills	3	0	0	3
			3	0	9	6
EIGHTH QUARTER						
CAR	1105.2	Supervised Work Experience	1	0	12	5
BUS	1103	Small Business Operations	3	0	0	3
			4	0	12	8

AUTOMOTIVE MECHANICS
Diploma

			Hrs.	Per Week	Credit	
			Class	Lab	Shop	Hrs.
FIRST QUARTER						
AUT	1101.1	Internal Combustion Engines	2	0	6	4
MAT	1101	Fundamentals of Mathematics	5	0	0	5
			7	0	6	9
SECOND QUARTER						
AUT	1101.2	Internal Combustion Engines	1	0	6	3
ENG	100	Reading Comprehension	1	2	0	2
BPR	1108	Basic Mechanical Blueprint Reading	0	3	0	1
			2	2	6	6
THIRD QUARTER						
AUT	1102.1	Engine Electrical and Fuel Systems	3	0	9	6
PHY	1101.1	Applied Science I	2	2	0	3
			5	2	9	9
FOURTH QUARTER						
AUT	1102.2	Engine Electrical and Fuel Systems	2	0	3	3
AUT	1121.1	Braking Systems	1	0	3	2
PHY	1101.2	Applied Science I	1		0	1
PHY	1102.1	Applied Science II	2	0	0	2
			6	0	5	8
FIFTH QUARTER						
AUT	1123	Automotive Chassis and Suspension System	3	0	9	6
PHY	1102.2	Applied Science II	1	2	0	2
			4	2	9	8
SIXTH QUARTER						
AUT	1124	Automotive Power Train Systems	1	0	9	4
WLD	1101	Basic Welding	1	2	0	2
			2	2	9	6
SEVENTH QUARTER						
AUT	1125.1	Automotive Servicing	2	0	6	4
AUT	1128	Automotive Air Conditioning	2	2	0	3
ENG	1102	Communication Skills	3	0	0	3
			7	2	6	10
EIGHTH QUARTER						
AUT	1125.2	Automotive Servicing	1	0	3	2
BUS	1103	Small Business Operations	3	0	0	3
PSY	1101	Human Relations	3	0	0	3
AUT	1121.1	Braking Systems	1			1
			8	0	3	9

MACHINE SHOP
Diploma

FIRST QUARTER

			Hrs. Per Week			Credit
			Class	Lab	Shop	Hrs.
MES	1101.1	Machine Shop I	2	0	6	4
MAT	1101.1	Fundamentals of Mathematics	4	0	0	4
BPR	1104	Blueprint Reading: Mechanical	0	3	0	1
			6	3	6	9

SECOND QUARTER

MES	1101.2	Machine Shop I	1	0	6	3
MAT	1101.2	Fundamentals of Mathematics	1	0	0	1
MAT	1103	Geometry	3	0	0	3
BPR	1105	Blueprint Reading: Mechanical	0	3	0	1
			5	3	6	8

THIRD QUARTER

MES	1102.1	Machine Shop II	2	0	6	4
MAT	1104	Trigonometry	3	0	0	3
BPR	1106	Blueprint Reading: Mechanical	0	3	0	1
			5	3	6	8

FOURTH QUARTER

MES	1102.2	Machine Shop II	1	0	6	3
PSY	1101	Human Relations I	3	0	0	3
ENG	100	Reading Comprehension	1	2	0	2
			5	2	6	8

FIFTH QUARTER

MES	1103.1	Machine Shop III	2	0	6	4
PHY	1101.1	Applied Science I	2	2	0	3
ENG	1102	Communication Skills	3	0	0	3
			7	2	6	10

SIXTH QUARTER

MES	1103.2	Machine Shop III	1	0	6	3
PHY	1101.2	Applied Science I	1	0	0	1
PHY	1102.1	Applied Science II	2	0	0	2
BUS	1103	Small Business Operations	3	0	0	3
			7	0	6	9

SEVENTH QUARTER

MES	1104.1	Machine Shop IV	2	0	6	4
PHY	1102.2	Applied Science II	1	2	0	2
MEC	1115	Treatment of Ferrous and Non-Ferrous Metals	1	0	3	2
			4	2	9	8

Class	Hrs. Per Week			Credit Hrs.
	Lab	Shop		
MES 1104.2	Machine Shop IV	1	0	6 3
MAT 1123	Machinist Mathematics	3	0	0 3
WLD 1101	Basic Welding	1	2	0 2
		5	2	6 8



TOOL & DIE MAKING
Associate of Tool & Die-Technical Diploma
(Offered even years)

			Hrs.	Per Week	Credit	
			Class	Lab	Shop	Hrs.
FIRST QUARTER						
TDM	1201.1	Machine Processes	2	0	6	4
MAT	1203	Trigonometry	5	0	0	5
			7	0	6	9
SECOND QUARTER						
TDM	1201.2	Machine Processes	1	0	6	3
MAT	1204	Compound Angles and Curves	5	0	0	5
			6	0	6	8
THIRD QUARTER						
TDM	1202.1	Machine Processes	2	0	6	4
DFT	1207	General Machine Drafting	2	4	0	4
BPR	1208.1	Blue Print Reading: Tool & Die	1	0	0	1
			5	4	6	9
FOURTH QUARTER						
TDM	1201.2	Machine Processes	1	0	6	3
MEC	1203	Metallurgy	3	0	0	3
BPR	1208.2	Blue Print Reading: Tool & Die	1	3	0	2
			5	3	6	8
FIFTH QUARTER						
TDM	1204.1	Machine Processes	2	0	6	4
MEC	1209	Hydraulics and Pneumatics	3	0	0	3
ELC	1201	Electricity - Industrial	1	3	0	2
			6	3	6	9
SIXTH QUARTER						
TDM	1204.2	Machine Processes	1	0	6	3
MEC	1205	Strength of Materials	5	0	0	5
			6	0	6	8
SEVENTH QUARTER						
TDM	1206.1	Machine Processes	2	0	6	4
TDM	1207	Special Problems & Molding	3	4	0	5
			5	4	6	9
EIGHTH QUARTER						
TDM	1206.2	Machine Processes	1	0	6	3
DFT	1209	Tool Design & Planning	2	3	0	3
			3	3	6	6

WELDING
Diploma

			Hrs. Per Week	Credit Hrs.
		Class	Lab	Shop
FIRST QUARTER				
WLD 1120	Oxyacetylene Welding & Cutting	3	0	12 7
		3	0	12 7
SECOND QUARTER				
WLD 1121	Arc Welding	3	0	12 7
		3	0	12 7
THIRD QUARTER				
WLD 1123	Inert Gas Welding	1	0	3 2
WLD 1122	Commercial & Industrial Practices	3	0	9 6
		4	0	12 8
FOURTH QUARTER				
WLD 1112	Mechanical Testing and Inspection	1	0	3 2
WLD 1124.1	Pipe Welding	2	0	6 4
BPR 1108	Basic Mechanical Blueprint Reading	0	3	0 1
		3	3	9 7
FIFTH QUARTER				
WLD 1124.2	Pipe Welding	1	0	6 3
MAT 1101.1	Fundamentals of Mathematics	4	0	0 4
ENG 100	Reading Comprehension	1	2	0 2
		6	2	6 9
SIXTH QUARTER				
WLD 1125	Certification Practices	3	0	6 5
MAT 1101.2	Fundamentals of Mathematics	1	0	0 1
MAT 1103	Geometry	3	0	0 3
MEC 1124	Metallurgy	3	0	0 3
		10	0	6 12
SEVENTH QUARTER				
DFT 1126	Pattern Development and Layout	0	3	0 1
ELC 1119	Electricity for Welders	3	2	0 4
ENG 1102	Communication Skills	3	0	0 3
		6	5	0 8
EIGHTH QUARTER				
MES 1112	Machine Shop Processes	1	3	0 2
BPR 1117	Blueprint Reading: Tool and Die	0	3	0 1
PSY 1101	Human Relations	3	0	0 3
BUS 1103	Small Business Operations	3	0	0 3
		7	6	0 9

COURSE DESCRIPTIONS

Please examine each course description before registering and determining if all prerequisites have been met. Prerequisites shown are those courses which must be successfully completed before attempting further study. In certain cases the department chairman may waive some prerequisites.

*Proficiency examinations will not be available for courses marked with an asterisk because of the nature of the course and in some cases safety requirements in the use of equipment. Any exceptions must be with the approval of the department chairperson.

AHR-1121 Fundamentals of Refrigeration: Domestic (3 - 0 - 12 - 7)

Terminology, laws of refrigeration, absolute pressure, and absolute temperature, energy conversion units; specific heat, latent heat, and sensible heat; measurement of heat in quantity and intensity; ton of refrigeration, pressure temperature relationships; transfer of heat by conduction, convection, and radiation; elementary refrigeration, refrigeration cycle and domestic refrigeration circuits and controls. Tools, materials and methods applicable to refrigeration; bending, and joining tubing. Safety practices will be stressed. Emphasis will be placed on domestic equipment because of its basic nature. Prerequisite: None.

AHR-1122 Fundamentals of Refrigeration: Commercial (3 - 0 - 12 - 7)

Commercial refrigeration installation and servicing of display cabinets, walk-in coolers and freezer units and mobile refrigeration systems are studied. Catalogs are used to calculate heat loads, sizing and matching system components and a study of circuits and controls, refrigerants, oils, and methods are made. The American Standard Safety Code for refrigeration is studied and its principles practiced. Prerequisite: AHR 1121.

AHR-1123 Principles of Air Conditioning (4 - 0 - 9 - 7)

Work includes the selection of various heating, cooling, and ventilating systems, investigation and control of factors affecting air cleaning, movement, temperature and humidity. Use is made of the psychrometric chart and sling psychrometer in determining needs to produce optimum temperature and humidity control. Commercial air conditioning equipment is assembled and tested. Heating and cooling loads are estimated and duct pressures are studied. Circuit and controls, both electric and pneumatic, are applied to heating and cooling. Practical sizing and balancing of duct work is performed as needed. Prerequisite: AHR 1122.

AHR-1124 Principles of Heating: Fuels and Burners (3 - 0 - 6 - 5)

Fuels and burners used in supplying heat for various types of heating systems — coal, oil, natural gas, manufactured gas, liquified petroleum gas, and electricity. Experiments in equipment selection, installation, adjustments, and servicing will be conducted. Warm air systems, heat emitter, electric heating, forced hot water and steam heating systems, including selection and sizing of equipment — registers, grills, furnaces, boilers, radiators, baseboards, piping, and ducts. Heating layout and specifications for an existing structure or one in blueprint stage will be prepared. Prerequisite: AHR 1123.

AHR-1126 All Year Comfort Systems and A.C. Servicing (4 - 0 - 9 - 7)

Emphasis is placed on the installation, maintenance, and servicing of equip-

ment used in the cleaning, changing, humidification, dehumidification, temperature control, and distribution of air in conditioned spaces. Installation of various ducts and lines needed to connect various components is made. Shop work involves circuit and controls, testing and adjusting of air conditioning and refrigeration equipment, and locating and correction of equipment failure. Prerequisite: AHR 1124.

AHR-1127 Duct Construction and Maintenance

(3 - 0 - 6 - 5)

Study of various duct materials including sheet steel, aluminum, fiber glass, and plastic. Safety, sheet metal hand tools, cutting and shaping machines, fasteners, and fabrication practices, layout methods, and development of duct systems. The student will study and service various duct systems and perform repairs including ducts made of fiber glass. A study is made of duct fittings, dampers and regulators, diffusers, heater and air washers, fans, insulation and ventilating hoods. Prerequisite: DFT 1116, AHR 1123. Corequisite: AHR 1126.

AUT-1101 Internal Combustion Engine

(3 - 0 - 12 - 7)

Development of a thorough knowledge and ability in using, maintaining, and storing the various tools and measuring devices needed in engine repair work. Study of the construction and operation of components of internal combustion engines. Testing of engine performance; servicing and maintenance of engine block, crankshaft, pistons, valves, cams and camshafts, fuel and exhaust systems, cooling systems; proper lubrication; and methods of testing, diagnosing and repairing. Prerequisite: None.

AUT-1102 Engine Electrical and Fuel Systems

(5 - 0 - 12 - 9)

A thorough study of electrical and fuel systems of the automobile. Battery cranking mechanism, generator, ignition, accessories and wiring; fuel pumps, carburetors, fuel injectors. Characteristics of fuels, types of fuel systems, special tools, and testing equipment for the fuel and electrical system. Prerequisite: AUT 1101.

AUT-1121 Braking Systems

(2 - 0 - 3 - 3)

A complete study of various braking systems employed on automobiles and light-weight trucks. Emphasis is placed on how they operate, proper adjustment, and repair. Prerequisite: PHY 1101.

AUT-1123 Automotive Chassis and Suspension Systems

(3 - 0 - 9 - 6)

Principles and functions of the components of automobile chassis. Practical job instruction in adjusting and repairing of suspension, and steering systems. Units to be studied will be shock absorbers, springs, steering systems, steering linkage, and front end alignment. Prerequisite: PHY 1101.

AUT-1124 Automobile Power Train Systems

(1 - 0 - 9 - 4)

Principles and functions of automotive power train systems; clutches, transmission gears, torque converters, drive shaft assemblies, rear axles and differentials. Identification of troubles, servicing, and repair. Prerequisites: PHY 1102, AUT 1123.

AUT-1125 Automotive Servicing

(3 - 0 - 9 - 6)

Emphasis is on the shop procedures necessary in determining the nature of trouble developed in the various component systems of the automobile.

Troubleshooting of automotive systems, providing a full range of experiences in testing, adjusting, repairing, and replacing. Prerequisites: AUT 1123, AUT 1121, AHR 1110.

AUT-1128 Automotive Air Conditioning

(2 - 0 - 3 - 3)

General introduction to the principles of refrigeration; study of the assembly of the components and connections necessary in the mechanisms, the methods of operation, and control; proper handling of refrigerants in charging the system. Prerequisite: PHY 1102.

BPR-1104 Blueprint Reading: Mechanical

(0 - 3 - 0 - 1)

Interpretation and reading the blueprints. Information on the basic principles of the blueprint; lines, views, dimensioning procedures and notes. Prerequisite: None.

BPR-1105 Blueprint Reading: Mechanical

(0 - 3 - 0 - 1)

Further practice of interpretation of blueprints as they are used in industry; study of prints supplied by industry; making plans of operations; introduction to drafting room procedures; sketching as a means of passing on ideas, information and processes. Prerequisite: BPR 1104.

BPR-1106 Blueprint Reading: Mechanical

(0 - 3 - 0 - 1)

Advanced blueprint reading and sketching as related to detail and assembly drawings used in machine shops. The interpretation of drawings of complex parts and mechanisms for features of fabrication, construction and assembly. Prerequisite: BPR 1105.

BPR-1107 Blueprint Reading — Construction Trades

(0 - 3 - 0 - 1)

How to read pictorial and orthographic drawings. Reading elevations, floor plans, symbols, notes, scales, construction types, interior and exterior details. Prerequisite: None.

BPR-1108 Basic Mechanical Blueprint Reading

(0 - 3 - 0 - 1)

This course is designed to give the students an understanding of Industrial Blueprints. Emphasis will be placed on the study of basic lines, views, dimensioning, notes, symbols, and industrial practice as related to the reading and interpreting of drawings.

BPR-1109 Blueprint Reading — Construction Trades

(0 - 3 - 0 - 1)

Advanced reading of design variations, construction materials, practices, planning, specifications and steel structures. Prerequisite: BPR 1107.

BPR-1116 Blueprint Reading — Air Conditioning

(1 - 3 - 0 - 2)

Reading of working prints, exploded drawings, wiring schematics, equipment layouts, shop sketches, building codes, heat systems, standards and symbols. Prerequisite: BPR 1108.

BPR-1117 Blueprint Reading: Welding

(0 - 3 - 0 - 1)

A thorough study of trade drawings in which welding procedures are indicated. Interpretation, use and application of welding symbols, abbreviations, and specifications. Prerequisite: BPR 1108.

A complete and thorough knowledge of tool and die prints will be required. Industrial prints will be used in this course. The difference between production drawings or operation sheets and tools drawing will be presented. Assembly drawings as the piece fits into place will be broken down into each detail print required. Prerequisite: DFT 1207.

BUS-100 Contemporary Business**(3 - 2 - 4)**

A study of business as the activating element in an enterprise system striving to achieve a combination of human, material, and capital resources to satisfy the needs and wants of people. An introduction to business from the professional (as opposed to the consumer) viewpoint.

BUS-101 Introduction to Business**(3 - 2 - 4)**

A survey of the business world with particular attention devoted to the structure of the various types of business organizations, methods of financing, internal organization, and management. Prerequisite: None.

BUS-110 Business Machines**(1 - 3 - 2)**

A general survey of the business and office machines. Students will receive training in techniques, processes, operation and application of rotary calculators and electronic (ten-key display and printer) calculators.

BUS-115 Business Law**(3 - 0 - 3)**

A general course designed to acquaint the student with certain fundamentals and principles of business law, including contracts, negotiable instruments and agencies. The uniform commercial code is considered wherever applicable. Prerequisite: None.

BUS-116 Business Law**(3 - 0 - 3)**

Includes the study of laws pertaining to bailments; insurance; agency; employer and employee relations; business organization; real property; and workers benefits. Prerequisite: BUS 115.

BUS-117 Clerical Accounting I**(5 - 2 - 6)**

A concentrated study of the bookkeeping cycle with emphasis on the office technologist's aspects of collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, including practical application of the principles learned. The student covers the basic concepts of a simple service enterprise operating on a cash basis. Prerequisites: MAT 110, MAT 101 or MAT 108.

BUS-118 Clerical Accounting II**(5 - 2 - 6)**

A thorough treatment of the field of general accounting, including elaboration on the bookkeeping cycle, providing the necessary foundation of transfer of clerical accounting skills to the business world. The course includes, among other aspects, accounting for notes, adjusting and closing entries, and accounting for purchases and sales. Accounting for partnerships is emphasized. Additionally, clerical accounting skills are further developed through the study of a pegboard accounting system. Laboratory projects include correlated problems and practice sets. Prerequisite: BUS 117.

BUS-119 Clerical Accounting III

(5 - 2 - 6)

A study of accounting for continued growth stemming from mastery of the recording techniques of general accounting and advancing to the complications of accruals and deferrals and, finally, to the "use understanding" of accounting records, reports, and financial statements. The corporate structure and its accounting complications are presented. Laboratory projects include correlated problems and practice sets. Prerequisite: BUS 118.

BUS-120 Accounting I

(5 - 2 - 6)

Principles, techniques and tools of accounting, for understanding of the mechanics of accounting. Collecting, summarizing, analyzing, and reporting information about service and mercantile enterprises, to include practical application of the principles learned. Prerequisite: None.

BUS-121 Accounting II

(5 - 2 - 6)

Partnership and corporation accounting including a study of payrolls, federal and state taxes. Emphasis is placed on the recording, summarizing and interpreting data for management control rather than on bookkeeping skills. Accounting services are shown as they contribute to the recognition and solution of management problems. Prerequisite: BUS 120.

BUS-122 Accounting III

(5 - 2 - 6)

The student is given a thorough knowledge of concepts used in the preparation and interpretation of financial statements. Each item of the income statement and balance sheet is carefully analyzed prior to making a selection as to how these items will be utilized. Prerequisite: BUS 121.

BUS-123 Finance I

(5 - 0 - 5)

Stock market transactions and brokerage operations are used as a vehicle in presenting this course. Financing of business units includes individuals, partnerships, corporations, and trusts. Sources and uses of capital are covered. Prerequisites: BUS 101, BUS 120.

BUS-125 Bank Fundamentals

(5 - 0 - 5)

The study and application of bank fundamentals. Emphasizes current trends in philosophy and position of management. Prerequisite: None.

BUS-206 Banking and Finance Credit

(5 - 0 - 5)

The techniques of installment lending are presented. Emphasis is placed on establishing the credit, obtaining and checking information, servicing the loan, and collecting the amounts due. Other topics discussed are inventory financing, special loan programs, business development and advertising, and the public relations aspect of installment lending. Prerequisite: BUS 121.

BUS-207 Principles of Bank Operations

(3 - 2 - 4)

The economic importance of banks; the receiving function, processing of cash items, bookkeeping operations, posting system, legal relationships with depositors, internal controls, trust services, growth of the American banking system, banking and public service. Prerequisite: BUS 120.

BUS-208 Financial Statements Analysis

(3 - 2 - 4)

A study of analytical procedures utilized in evaluating solvency and profitability of businesses. Horizontal and vertical analysis of comparative statements are examined in the light of general economic conditions and conditions unique to the businesses being evaluated. Prerequisite: Department Permission

BUS-209 Banking Services

(3 - 2 - 4)

This course discusses the basis of banking services, both internal and external, and seeks simply to explain the why, what, and some of the how of public relations and marketing. It is intended as an overview for all bankers in terms of the essentials of bank services. Prerequisite: None

BUS-223 Intermediate Accounting

(5 - 0 - 5)

A general investigation of the accounting principles, concepts, and procedures underlying the preparation of financial statements followed by an in-depth analysis of financial statements and managerial implications as they are derived from accounting data. Prerequisite: BUS 122

BUS-225 Cost Accounting I

(5 - 0 - 5)

Nature and purpose of cost accounting, accounting for direct labor, materials, and factory overhead; for job order and process cost systems. Prerequisite: BUS 121.

BUS-226 Cost Accounting II

(5 - 0 - 5)

A study of standard cost procedures; selling, administrative and distribution costs; budgeting and management use of cost data. Prerequisite: BUS 225

BUS-229 Taxes I

(3 - 2 - 4)

A study of federal and state personal income taxes, payroll taxes, sales and use taxes. Prerequisite: BUS 121 or HRM 105

BUS-230 Taxes II

(3 - 2 - 4)

A study of federal and state partnership and corporate income taxes. Prerequisite: BUS 229.

BUS-231 Government and Business

(3 - 0 - 3)

A discussion of the extent to which government regulates business and the economy along with the implications and problems with which students, as citizens and voters, must be familiar. Covered are such regulations as Interstate Commerce Act, Sherman Act, Clayton Act, Pure Food and Drug Act, The Federal Fair Labor Standards Act, and the National Labor Relations Act. Prerequisite: ECO 104

BUS-233 Personnel Management and Supervision

(5 - 0 - 5)

This course presents the fundamental principles and successful practices in the organization and supervision of employees. A study of the critically important and practical concepts of modern day supervision is presented. Results of modern social-psychological research and case studies are employed to demonstrate and emphasize leadership and motivation in the job situation. Prerequisite: PSY 206.

BUS-234 Introduction to Management

(3 - 2 - 4)

The student is given a thorough introduction to basic theories of management and techniques of applying these in a real situation. Prerequisite: None

BUS-235 Business Organization & Management

(3 - 2 - 4)

Principles of business organization, administration, and management covering management theory including planning, staffing, controlling, coordinating, directing, financing, and budgeting. An overview of developing and engineering the product, methods analysis and control, principles and administration of industrial relations and financing controls as interrelated functions of management are stressed. Prerequisite: BUS 101.

BUS-236 Small Business Management

(3 - 0 - 3)

A study of the principles of management as they relate to small businesses. The problems of small businesses will be stressed along with the possible solutions and how to alleviate the most common causes of business failures. Prerequisite: None.

BUS-238 Consumer Behavior

(3 - 2 - 4)

An examination of motivational and behavioral approaches to understanding consumer behavior in buying goods and services and the business-management problems relating to buyer decisions. Prerequisite: BUS 239.

BUS-239 Introduction to Marketing

(5 - 0 - 5)

A general survey of the field of marketing, with a detailed study of the function, policies, and institutions involved in the marketing process. Prerequisite: None.

BUS-240 Channels of Distribution

(5 - 0 - 5)

A study of the characteristics, economic aspects, regulations, services, and problems relating to systems of physical distribution. Prerequisite: BUS 239

BUS-247 Insurance

(5 - 0 - 5)

A presentation of the basic principles of risk insurance and their application. A survey of the various types of insurance is included. Prerequisite: BUS 116 or HRM 102.

BUS-266 Professional Sales Techniques

(3 - 0 - 3)

A study of the fundamentals of salesmanship in retail, wholesale, and specialty selling. Theory techniques in selling and practice demonstrations will be utilized. Emphasis will be placed on prospecting for sales, planning selling strategies, sales presentation and closing techniques. Prerequisite: BUS 239

BUS-269 Auditing

(3 - 2 - 4)

Principles of conducting audits, both internal and external, with special emphasis on the control and safeguarding of assets and properly recording liabilities. Prerequisites: BUS 122 and BUS 225.

BUS-297 Real Estate Fundamentals

(5 - 0 - 5)

A study of the principles of Real Estate with emphasis on Real Estate Law, Finance, and the Realtor's Code of Ethics. Upon successful completion of this course, the student will understand the functions of a Real Estate Agent and will meet the educational requirements of the N.C. Real Estate Licensing Board. Prerequisite: None.

BUS-1103 Small Business Operations

(3 - 0 - 0 - 3)

An introduction to the business world, problems of small business operation, basic business law, business forms and records, financial problems, ordering and inventorying, layout of equipment and offices, methods of improving business, and employer-employee relations. Prerequisite: None.

CAR-1101 Carpentry I

(5 - 0 - 15 - 10)

This course will be presented as an introduction to the first steps necessary from the finished foundation to the complete framing of a building. Methods of framing entire walls before erection will be presented. Motion saving methods and overall planning of time will be presented. Size of nails and identification of nails will be studied.

CAR-1102 Cabinetmaking I

(5 - 0 - 15 - 10)

This course is designed to introduce the student to hand tools used in a cabinet shop. After several projects with hand tools the student will be placed on each machine. Various types of wood will be used and identification of the various types of wood will be required.

CAR-1103 Carpentry II

(0 - 0 - 12 - 4)

In this course the students will study all types of roof construction. Each student will be required to cut and assemble all types of rafters. Students will be required to put on all types of shingles and prepare a roof for "built up construction." The students will also be required to study the framing square in order to figure the length of rafters and cutting of all types of rafters and truss construction. Prerequisite: CAR 1101.

CAR-1104 Cabinetmaking II

(0 - 0 - 9 - 3)

This course will go into the necessary framing for cabinet work. Students will be presented a study of built-in cabinets and pre-constructed cabinet work. Built-in book cases and special work will be presented. Prerequisite: CAR 1102.

CAR-1105 Supervised Work Experience

(2 - 0 - 24 - 10)

This course will present the student with the finish work of carpentry. Types of baseboard, moulding, door facing, and framing and finishing stair cases will be presented. Each student will be subjected to a series of projects under close supervision that will require use of all finishing tools normally used by a carpenter. Clean work and self pride will have an emphasis in this course. Prerequisite: CAR 1103, CAR 1104.

CHM-100 Introduction to Chemistry

(3 - 3 - 4)

For students who need additional work in General Chemistry. An introduction to General Chemistry which is essential for understanding organic and biological chemistry. Laboratory work emphasizes these basic concepts.

This course involves a study of physical and chemical properties of substances, weights and measurements, electrochemistry, and metals in their application of chemistry to industry.

CIV-101 Surveying

(2 - 6 - 4)

Theory and practice of plane surveying, including taping, differential and profile leveling, cross sections, earthwork computations, transit, stadia and transit-tape surveys. Corequisite: MAT 100.

CIV-102 Surveying

(2 - 6 - 4)

Triangulation of ordinary precision; use of plane table; calculation of areas of land; land surveying; topographic surveys and mapping. Prerequisite: CIV 101. Corequisite: MAT 102.

CIV-103 Surveying

(2 - 6 - 4)

Route surveys by ground and aerial methods; simple, compound, reverse, parabolic and spiral curves; geometric design of highways; highway surveys and plans, including mass diagrams. Prerequisite: CIV 102. Corequisite: MAT 103.

CIV-114 Statics

(5 - 0 - 5)

Forces, resultants, and types of force systems; moments, equilibrium of coplanar forces by analytical and graphic methods; stresses and reactions in simple structure; equilibrium of forces in space; static and kinetic friction; center of gravity, centroids and moment of inertia. Corequisite: MAT 102.

CIV-202 Properties of Soils

(2 - 3 - 3)

Study of soil types and their physical properties; mechanical analysis and tests of soils; techniques and subsurface investigation; earth pressure theories; bearing capacity; stability of slopes; hydrostatics of ground water; methods of compaction and consolidation. Prerequisite: CIV 216.

CIV-204 Surveying

(2 - 6 - 4)

Aerial photogrammetry; applications of aerial surveys; building and road construction surveying; lines and grades for foundation layout, building construction, bridge layout, sewer and pipe line surveys, further study and application of advanced surveying and techniques and instruments. Prerequisite: CIV 103.

CIV-216 Strength of Materials

(5 - 0 - 5)

Fundamental stress and strain relationship; torsion; shear and bending moments; stresses and deflections in beams; introduction to statically indeterminate beams; columns; combined stresses. Prerequisite: CIV 114.

CIV-217 Construction Methods and Equipment

(3 - 2 - 4)

Excavating methods and equipment used in building and highway construction; pile driving, construction techniques and equipment used in reinforced concrete buildings, bridges, lift-slabs, thin-shells and folded plates, erection methods and equipment of structural steel buildings and bridges; carpentry in house and heavy timber construction safety. Field inspection trips.

Study and testing of the composition and properties including cementing agents, aggregates, admixtures, and air-entrainment; design and proportioning of concrete mixes to obtain pre-determined strengths and properties; methods of placing and curing concrete; standard control tests of concrete. Analysis and design of reinforced concrete beams, floor systems and columns. Use of CRSI Handbook. Principles of prestressed and precast concrete. Prerequisite: CIV 216.

CIV-219 Steel and Timber Construction

(3 - 2 - 4)

Analysis and basic design of steel beams, tension members, columns, and riveted, high strength bolted, welded connections; study of plate girders, industrial building roofs and vents, continuous spans, lightweight steel construction; use of American Institute of Steel Construction Manual; introduction to rigid frames and plastic design in steel. Design of timber members and their connections. Field inspection trips. Prerequisite: CIV 216. Corequisite: CIV 255.

CIV-220 Construction Planning

(2 - 3 - 3)

Analysis of construction plant layout requirements and contractor's organization for building and highway projects. Construction scheduling; project control and supervision; coordinating trades on building construction. Operations charts, and practical application of Critical Path Method (CPM) for construction planning, scheduling, and "time-cost" determination. Prerequisite: CIV 217.

CIV-221 Asphalt

(2 - 2 - 3)

Study and testing of asphaltic materials, asphalt pavements and surface treatments. Testing will include the flash point test, viscosity, stability and flow, and ductility. Study of asphalt in application to bridges, hydraulics, roadways and appurtenances. Prerequisite: CIV 218.

CIV-225 Estimates, Codes and Specifications

(3 - 6 - 5)

Interpretation of working drawings of timber, steel, and reinforced concrete structures and highways; bidding procedures from preliminary survey to final bid, study of the North Carolina Building Code; and the Occupational Safety and Health Act (OSHA); practical costs and estimates problems; specifications. Prerequisite: CIV 217.

CIV-227 Construction of Highways

(4 - 0 - 4)

Construction practices for road building, including soil properties, grading, base, subbase, drainage, cuts and fills. Design of intersections, study of traffic flow and surveys, timespace diagrams. Organizational structure of the national highway system. Field trips. Prerequisites: CIV 202, CIV 103.

CIV-228 Engineering Relations and Ethics

(2 - 0 - 2)

Study of the Engineers' Codes. Brief coverage of other fields of engineering technology. Ethical relations with employer, employees, clients, other technicians. Class discussions of situations involving engineering law and ethics. Prerequisite: Senior status.

CIV-229 Branches of Civil Engineering Technology

(3 - 0 - 3)

Study of hydraulics, dam design, traffic engineering, hydrology, water

systems design and layout, sewage treatment. Field trips. Prerequisite: Senior status.

CJC-101 Introduction to Criminal Justice

(5 - 0 - 5)

This course is designed to provide the student with a philosophy of criminal justice with its legal limitations in our society and the primary responsibilities of the various agencies of the criminal justice system. The basic processes of criminal justice are discussed. The student receives an orientation relative to job opportunities. Prerequisite: None.

CJC-102 Introduction to Criminology

(5 - 0 - 5)

A general course designed to introduce the student to the causation of crime and criminal deviant behavior. The course presents the problem of crime historically and the aspects of contemporary efforts to meet the social problems caused by criminal behavior. Prerequisite: None.

CJC-110 Introduction to Juvenile Justice

(5 - 0 - 5)

A general survey of juvenile behavior considers individual and social problems; theories of delinquency causation, and methods of prevention and correction. The course presents a general overview of the Juvenile Court and the system of juvenile justice. Prerequisite: None.

CJC-115 Criminal Law I

(3 - 0 - 3)

A course designed to present the concepts of criminal law and to provide a legal groundwork for those who seek to enter the criminal justice field. Prerequisite: None.

CJC-125 Judicial Process

(4 - 0 - 4)

This course provides the student with a review of court systems, procedures from incident to final disposition, principles of constitutional, federal, state, and civil laws as they apply to and affect law enforcement. Prerequisite: CJC 101.

CJC-200 Crime Prevention

(3 - 0 - 3)

This course is designed to make the student aware of the many opportunities for lawbreaking open to the potential criminal. Various types of preventive securities such as locks, lighting, alarms, neighborhood watch programs, public presentations on crime prevention to interested groups by the students, etc., will be studied. Prerequisite: None.

CJC-201 Motor Vehicle Law

(3 - 0 - 3)

A study of the traffic enforcement codes with primary emphasis placed on North Carolina Law as it relates to motor vehicles. Prerequisite: None.

CJC-202 Traffic Planning and Management

(3 - 2 - 4)

This study covers the topic of traffic management and enforcement giving an overview of problems as they exist today. Attention is given to legislation, organization of the traffic unit, responsibilities to the traffic function of the various units within the law enforcement agency, enforcement tactics, evaluation of the traffic program effectiveness, and allocation of personnel and materials. Accident investigation is stressed. Prerequisite: None.

The kinds of legal evidence and the rules governing the admissibility of evidence in court are explored in this course. Rules of evidence that apply in civil, criminal, and Federal courts are discussed. Topics include: the hearsay rule, dying declarations, privileged communications, and the concepts of relevancy, competency and materiality. Prerequisite: CJC 101.

CJC-206 Community Relations**(3 - 0 - 3)**

This course provides the student with an understanding of community structures as they relate to minority groups, peer groups, socioeconomic groups, leader groups, and group relations. Emphasis is on the organization and function of these groups as they relate to the profession of criminal justice-protective service. Prerequisite: CJC 101.

CJC-210 Criminal Investigation I**(4 - 0 - 4)**

This course introduces the student to fundamentals of investigation, crime scene search, recording, collection and preservation of evidence. Sources of information, interview and interrogation, case preparation, and court presentation will be discussed. Prerequisite: Permission of Department Chairperson.

CJC-211 Introduction to Criminalistics**(4 - 2 - 5)**

A general survey of criminal investigation includes the methods and techniques used in modern scientific investigation of crime, with emphasis on the practical use of these modern methods by the student. Laboratory techniques will be demonstrated and the student will use the scientific laboratory equipment. Prerequisite: CJC 210.

CJC-212 Narcotics, Drugs, and Human Behavior**(3 - 2 - 4)**

This course familiarizes the student with North Carolina drug laws and introduces the identification and classification of dangerous drugs. Emphasis is on the various effects that the different drugs have on the human body and in the temperament of individuals. Prerequisite: Permission of Department Chairperson.

CJC-213 Criminal Investigation II**(4 - 0 - 4)**

This is a continuation of CJC 109 with emphasis on specific offenses such as homicide, burglary, robbery, larceny, narcotics, arson, and sex. Prerequisite: CJC 210.

CJC-216 Criminal Law II**(3 - 0 - 3)**

A continuation of CJC 105 with emphasis on North Carolina Law. The course deals with the concept of criminal responsibility and competency; the law of arrest, and search and seizure; rights of arrested persons; and the laws governing wiretapping and electronic surveillance. The casebook approach is used, with leading cases assigned as outside reading and for class discussion. Prerequisite: CJC 115.

CJC-217 Patrol Procedures**(3 - 0 - 3)**

This course includes methods of personnel distribution and assignments, operation of vehicles on patrol, answering calls of various types. It provides the opportunity to develop perception and observation concerning persons, places, and things. Safe driving techniques and uses of equipment are presented. Prerequisite: Permission of Department Chairperson.

Principles of organization and administration, personnel management and supervision, training, communication, records, property maintenance, and miscellaneous services are introduced. Prerequisite: None.

DFT-101 Drafting (2 - 4 - 4)

Introduction to field of drafting; lettering; use of instruments; geometric constructions; orthographic projection theory, sketching, reading, and instrument drawing; basic pictorial drawings; introduction of dimensions and notes; and reproduction process. Prerequisite: None.

DFT-102 Drafting (2 - 4 - 4)

Auxiliary views; sections and conventions; dimensioning and shop notes for detail drawings; introduction of working drawings; screw threads, fasteners, keys, and spring; and simple assembly drawings. Prerequisite: DFT 101.

***DFT-103 Drafting (2 - 4 - 4)**

The study of precision dimensioning; preparation of set of working drawings; assembly drawings, detail drawings, and parts lists; surface quality (finish); and weldments and symbols. Prerequisite: DFT 102.

DFT-104 Civil Drafting (2- 4 - 4)

Plats as required by law drawn in pencil and ink. Highway construction layouts and profiles, steel and wood structural drawings, topographical mapping and symbols. Prerequisite: DFT 101.

DFT-109 Electronic Drafting (2 - 4 - 4)

Use of instruments; lettering; reading, sketching and drawing orthographic views; electrical and electronic symbols; block diagrams; schematic diagrams and wiring diagrams. Prerequisite: None.

***DFT-201 Design Drafting I (2 - 6 - 4)**

Structural steel layout and detailing; application of structural shapes; fluid distribution; selection of pipe, tubing and fittings, single line piping diagrams, and two line piping drawings; electronic and electrical symbols; and single line, schematic, and wiring diagrams. Emphasis will be placed on use of catalogs and manuals relating to the above areas of study. Prerequisite: DFT 103.

DFT-204 Descriptive Geometry (2 - 6 - 4)

Points, edges, line, planes, curved lines, curved surfaces, irregular surfaces, intersections, developments, auxiliary projections, revolutions, vectors, and practical design applications. Prerequisite: DFT 102.

***DFT-205 Design Drafting II (2 - 6 - 4)**

Charts and graphs, plats as required by law; topographical mapping and symbols; and design layouts and working drawings of gears, gear train drives, belt and pulley drives, and chain and sprocket drives. Prerequisite: DFT 103.

***DFT-206 Design Drafting III**

(2 - 6 - 4)

Assignment of mechanical design projects requiring use of research; application of basic engineering principles; calculations; and use of various manuals, catalogs, and periodicals. Preliminary design sketches, layout drawings, detail drawings, sub-assembly drawings, assembly drawings, specifications, patent drawings and simplified drawing practices will be required. Prerequisites: DFT 205 and DFT 211.

***DFT-211 Mechanisms and Kinematics Design**

(2 - 6 - 4)

Introduction and definitions of kinematic terms; vectors; motion concepts; kinematic drawing; kinematic displacement; centros; velocities and accelerations of mechanisms; motion curves; displacement diagrams and cam layout; and practical problems, gear trains, cams, belts and pulleys, and chains and sprockets. Prerequisites: DFT 204, DFT 205, and PHY 103.

***DFT-212 Jig and Fixture Design**

(2 - 6 - 4)

Emphasis is placed on tool planning, design and drafting; commercial standards, principles and practices; selection of materials and standard parts; use of catalogs and manuals; and cost estimates. Projects are assigned requiring the design of jigs, fixtures, and gauges. Prerequisite: DFT 205.

***DFT-242 Architectural Drafting**

(2 - 6 - 4)

Complete set of working drawings, plot plan, floor plan, elevations, wall sections, details, electrical plan, plumbing, foundation, dimensioning practice, symbols and materials schedule. Prerequisite: DFT 103.

DFT-1126 Pattern Development and Layout

(0 - 3 - 0 - 1)

A study of methods used in layout of sheet steel. Special emphasis is placed on developing pipe and angle layouts by the use of patterns and templates. Prerequisites: BPR 1104.

***DFT-1127 Construction Trades Drafting I**

(2 - 4 - 0 - 4)

Use of instruments; lettering; preliminary sketches, foundation plan, floor plan, and exterior elevations for a residential or light commercial building; dimensioning practices; symbols; and conventions. Prerequisite: BPR 1109.

***DFT-1128 Construction Trades Drafting II**

(0 - 3 - 0 - 1)

Structural plans and details including use of steel, concrete and timber; typical wall sections; and miscellaneous sections and details. Prerequisite: DFT 1127.

DFT-1207 General Machine Drafting

(2 - 4 - 0 - 4)

Use of instruments; lettering; orthographic drawing, sections and primary auxiliary views; dimensioning; displacement, timing and motion diagrams; and cam layout. Prerequisite: BPR 1106.

***DFT-1209 Tool Design and Planning**

(2 - 3 - 0 - 3)

This course will enable the student to plan the process of production and isolate the areas that must be tooled for production. Cost of tools, jig and fixtures, and gaging will be considered. Students will review available items from vendors and utilize standard bushing charts and other references. Typical tool design procedures will be employed and prints must reflect standard procedures. Prerequisite: DFT 1207.

ECO-102 Economics I

(3 - 0 - 3)

The fundamental principles of economics including the institutions and practices by which people gain a livelihood. Included is a study of the laws of supply and demand and the principles bearing upon production, exchange distribution, and consumption both in relation to the individual enterprise and to society at large. Prerequisite: None.

ECO-104 Economics II

(3 - 0 - 3)

Greater depth in principles of economics including a penetration into the composition and pricing of national output, distribution of income, international trade and finance, and current economic problems. Prerequisite: ECO 102.

ECO-107 Consumer Economics

(3 - 0 - 3)

Designed to help the student use his resources of time, energy, and money to get the most out of life. It gives the student an opportunity to build useful skills in buying, managing his finances, increasing his resources, and to understand better the economy in which he lives. Prerequisite: None.

ECO-108 Consumer Economics

(5 - 0 - 5)

An in-depth study of consumer economics integrating the basic course with functional application of economic principles. Prerequisite: None.

EDP-104 Introduction to Business Data Processing

(2 - 2 - 3)

Fundamental concepts and operational principles of business data processing systems, along with an introduction to computer programming, are presented. The emphasis is on concepts and terminology used in business type applications. Prerequisite: None.

EDP-105 Introduction to Scientific Data Processing

(2 - 2 - 3)

This course is designed to meet the basic data processing needs for students within the Division of Engineering Technology. The emphasis is on data representation, numbering systems, and solving scientific and engineering type problems in either Fortran or Basic. Prerequisite: None.

EDP-106 Applied Business Data Processing

(1 - 4 - 3)

This course offers the business major an opportunity to gain a working knowledge of procedures used in mechanized business applications. The procedures cover date entry and editing, master file maintenance, and generation of distribution reports, adjusting entries, and financial statements. Prerequisite: EDP 104.

EDP-107 Introduction to S/360-370 (DOS)

(3 - 2 - 4)

This course introduces operating system and multi-programming concepts. Memory configuration, modes of representing data, addressing of basic instruction formats on S/360-370 are included. Prerequisite: EDP-104.

EDP-108 Business Programming (BAL)

(3 - 2 - 4)

The Basic Assembler Language (BAL) programming course includes details for writing programs to function under the Disk Operating System (DOS) of System/360. Specific information pertaining to DOS is presented. Corequisite: EDP-107.

EDP-109 Systems and Procedures (BAL)

(2 - 3 - 3)

Programming projects are assigned to students to be written and run on the System/360 in Basic Assembler Language. The projects include typical procedures and applications found in business and industry. Prerequisite: EDP-108.

EDP-118 Data Base Management Concepts

(3 - 2 - 4)

This course introduces data base concepts and compares this type of file organization with the more conventional types. The students will develop a data base using one of the up-to-date data base systems. Prerequisite: EDP 109.

EDP-205 Scientific Programming (FORTRAN IV)

(3 - 2 - 4)

Formula Translation (FORTRAN) programming stresses the components of language including fundamental concepts, subscribed variables, sub-programs, logical operations, character manipulation, advanced format, and input-output features for disk and tape. Prerequisite: EDP 107. Corequisite: MAT 214.

EDP-206 Systems and Procedures (FORTRAN IV)

(2 - 3 - 3)

Emphasis is on the solution of practical problems of a mathematical nature from business and industry. Prerequisite: EDP 205.

EDP-215 Business Programming (COBOL)

(3 - 2 - 4)

The Common Business Oriented Language (COBOL) is presented in detail. A variety of business and commercial applications are programmed and tested. Prerequisite: EDP 107.

EDP-216 Systems and Procedures (COBOL)

(2 - 3 - 3)

This course covers studies of typical COBOL systems and procedures now being used in commercial and industrial computer installations. The student studies the organization of data for computer application. Major applications are followed with projects performed by the student. Prerequisite: EDP 215.

EDP-217 Business Programming (Advanced COBOL)

(2 - 3 - 3)

This course is an extension of basic COBOL. It allows time needed for understanding and writing more sophisticated programs under OS. Corequisite: EDP 216.

EDP-218 Business Programming (RPG)

(3 - 2 - 4)

Report Program Generator (RPG) coding includes preparation of spacing chart, file description, file extension, input, calculation, and out-put specifications. Business application programs are written. Prerequisite: EDP 107.

EDP-219 Systems and Procedures (RPG)

(2 - 3 - 3)

This course gives the student additional explanation on customs and procedures as they relate to the Report Program Generator coding system. Corequisite: EDP 218.

In addition to learning theoretical concepts, students study an existing data processing system and make recommendations for improvement, or design a new system. The work is in the nature of a programmer-analyst. The task involves the flow of work from its point of origin to completion by the computer program including all forms design, full documentation, and reports. Prerequisite: EDP 107.

***EDP-221 Advanced Projects (COBOL)**

(2 - 3 - 3)

This course is designed to provide the student with experience in applying the various computer languages and concepts in advanced problem solving, primarily COBOL. Included will be the use of the disk, library programs, and job control language as needed for the projects. Prerequisite: EDP 206, EDP 217.

ELC-201 Electrical Machinery

(3 - 0 - 3)

A course in basic understanding and application of electricity to modern industrial machinery. Included is a study of D.C. and A.C. motors controls and protecting devices, transformers, and their industrial applications. Prerequisite: PHY 103.

ELC-205 Applied Electricity

(2 - 4 - 4)

Electrical code, interpretation of nameplate data, motor characteristics and selection, motor controls and protection devices, single phase and three-phase current applications, wire size calculations and Y and Delta connections. Prerequisite: PHY 103.

ELC-1117 Basic Electricity

(3 - 2 - 0 - 4)

A study of the electrical structure of matter and electron theory, the relationship between voltage, current and resistance in series, parallel, and series-parallel circuits. An analysis of direct current circuits by Ohm's Law and Kirchoff's Law. A study of the sources of direct current voltage potentials. Fundamental concepts of alternating current flow, reactance, impedance, phase angle, power, and resonance. Analysis of alternating current circuits.

ELC-1118 Applied Electricity

(3 - 2 - 0 - 4)

Provides fundamental concepts in single and polyphase, alternating current circuits, voltages, currents, power measurements, transformers, and motors. Instruction in the use of electrical test instruments in circuit analysis. The basic concepts of AC and DC machines and simple system controls. An introduction to the type of control used in small appliances such as: thermostats, timers, or sequencing switches. Applicable sections of the current National Electrical Code will also be presented. Prerequisite: ELC 1117.

ELC-1119 Electricity for Welders

(3 - 2 - 0 - 4)

A study of the relationship between voltage, current, and resistance in series and parallel circuits. Analysis of A.C. and D.C. circuits by Ohms and Watts laws. A study of D.C. current motors and generators. A study of transformers, rheostats and controls, basic study of grounding, bonding and calculation of conductors.

A study of the relationship between voltage, current and resistance in series, parallel and combination circuits. Fundamental concepts of alternating current flow; a study of reactance, impedance, phase angle, power and resonance and alternating current circuit analysis.

ELN-101 Fundamentals of D-C**(4 - 4 - 6)**

Principles of direct current electricity including: basic electron physics; electrical units of measure; Ohm's law; series, parallel and series-parallel resistive networks; Kirchoff's laws; basic measuring instruments; electrostatics; capacitors; R-C time constants; magnetics; inductance; L-R time constants. Laboratory experiments provide proof of the important concepts developed. Prerequisite: None.

ELN-102 Fundamentals of A-C**(4 - 4 - 6)**

Principles of alternating current electricity including; sine wave analysis; resistive, capacitive, and inductive networks; phasor relations in complex circuits; non-resonant and resonant series and parallel L-C-R circuits; inductive coupling; air and iron core transformer analysis. Important theoretical concepts are substantiated by laboratory experiments. Prerequisite: ELN 101.

ELN-104 Vacuum Tube Network Analysis**(4 - 4 - 6)**

An Introductory study of vacuum tubes as an active circuit element with graphical and equivalent circuit analysis. Networks are analyzed with the use of Thevenin Theorem, Norton's Theorem, Kirchoff's Voltage and current laws and the Superposition Theorem. Both device and circuits are studied to develop the skills necessary to analyze circuit performance of complex networks using active devices.

ELN-106 Introduction to Solid State Devices**(4 - 4 - 6)**

A brief introduction to semiconductor theory, followed by a D-C analysis of the PN junction, semiconductor diodes (conventional and Zener) and bipolar transistors. Graphical analysis is employed for introductory purposes but course emphasis is directed toward circuit solution utilizing hybrid parameters. Transistor biasing is considered in conjunction with device limits and thermal effects. Prerequisite: ELN 103.

ELN-207 Transistor Amplifier Analysis**(4 - 4 - 6)**

Further development of the semiconductor studies of ELN 106. Alternating current circuit concepts are introduced. The transistor is studied as an amplifier in the common emitter, common collector and common base configurations. The push-pull amplifier is introduced. Field effect transistors are included as a separate study. Prerequisite: ELN 106.

ELN-209 Circuit Analysis**(4 - 6 - 6)**

A study of special purpose amplifiers and related components. Cascade amplifiers are studied from their non-ideal aspects. Operational amplifiers are studied as analog devices capable of performing mathematical operations. Input and output level and impedance matching of amplifiers is considered as well as additional related topics such as differential amplifiers and a further study of oscillators. Prerequisite: ELN 207.

ELN-211 Logic Circuits

(4 - 4 - 6)

An introduction to solid state logic circuits. Topics of study are — OR gates, AND gates, inverters, inhibit operations. EXLUSIVE OR gates, AND gates, NOR gates, binary addition and subtraction with logic circuit elements, registers encoding, decoding, and finally combining the circuits studied in suitable configurations to perform logic operations. Prerequisites: ELN 106, MAT 121.

ELN-213 Waveshaping and Pulse Circuits

(4 - 4 - 6)

A course continuing studies initiated in ELN 211 and introducing additional topics. Logic circuits study is extended to include bistable multivibrator, monostable multivibrator, astable multivibrator and Schmitt trigger. Differentiators, integrators, ramp generators and related topics are included as well as additional studies of device limitations as applied to switching circuits. Prerequisite: ELN 211.

ELN-214 Microprocessors

(4 - 4 - 6)

A study of the computer on a chip. This study includes combinational logic circuits, numbering systems, memory - RAM/ROM, Tri-state control, busing, Peripheral interface adapter. The units are studied from both a hardware and programming technique and are combined into a micro-computer system for analysis.

ELN-217 Introduction to Special Devices

(4 - 4 - 6)

A study encompassing semiconductor devices with negative resistance characteristics or other special properties. Devices studied include unijunction transistors, four layer diodes (SCR, SCS, TRIAC, etc.), tunnel diodes. Shockley diodes and others. Prerequisite: ELN 209.

ELN-219 Industrial Instrumentation

(4 - 4 - 6)

An investigation into sensing devices, information processing and discrimination, recorders, and output devices. These elements are considered in analog, and digital applications to industrial control and automation systems. Prerequisites: ELN 209, ELN 211.

ELN-221 Electronic Circuit Design

(4 - 4 - 6)

A research project for the advanced student to provide a realistic and creative application of his fundamental electronic knowledge to a demonstrative system of his own design. A further objective in cooperation with the English department is to provide further experience in preparing meaningful technical reports. Prerequisites: ELN 209, ELN 211.

EMS-101 Emergency Medical Services

(2 - 2 - 3)

This course is designed to prepare the student to deal with emergency medical problems. The curriculum is based on materials from the U.S. Department of Transportation, State Health Department, Public Health, American Medical Association, Ambulance Services of the U.S., and American Red Cross. Prerequisite: Permission of Department Chairperson.

ENG-100 Reading Comprehension

(1 - 2 - 2)

A reading program designed to assist students in improving their reading skills at whatever level necessary. Students are assigned to level 100.1, 100.2, or 100.3 based on their entrance reading scores. In level .1 and .2 emphasis is

on reading for comprehension, vocabulary improvement, and increasing speed. Level .3 is designed for students who wish to read independently in a field of their choice. Students are responsible for finding an instructor to work with them individually, selecting a reading list, and discussing the chosen material. Brief written reviews will supplement oral discussions. Students will be expected to read at least five major works.

ENG-101 Fundamentals of English

(3 - 0 - 3)

Designed to aid the student in achieving correct and effective self-expression. The emphasis is on improvement of written expression through the use of the functional approach. The course is intended to prepare the student for appropriate written and spoken communication in day-to-day situations in his work and in his social life. Prerequisite: None.

ENG-102 Composition

(3 - 0 - 3)

Designed to aid student in further improvement of self-expression in business and technical composition. Emphasis is on the sentence, paragraph, and whole composition. Prerequisite: ENG 101.

***ENG-103 Report Writing**

(3 - 0 - 3)

The fundamentals of English are utilized as a background for the organization and techniques of modern report writing. Exercises in developing typical reports, using writing techniques and graphic devices are completed by the students. Practical application in the preparation of a full length report is required of each student. This report is based on material in his chosen curriculum. Prerequisite: ENG 102.

ENG-111 Grammar

(5 - 0 - 5)

A basic course covering the fundamentals of English grammar. Emphasis is on grammar and sentence structure. Intended to provide the students with the basic tools for their roles in business. This course is primarily designed for students in the Office Technology option. Prerequisite: None.

***ENG-204 Oral Communication**

(3 - 0 - 3)

A study of basic concepts and principles of oral communications. Emphasis is placed on the speaker's attitude, diction, voice, and the application of particular techniques to correct speaking habits and to produce effective oral presentation. Prerequisite: None.

***ENG-205 Written Communications**

(5 - 0 - 5)

A communications course designed for secretarial students who must learn to initiate written documents for the employer. Primary emphasis is placed upon the development of skills in the techniques of writing business letters, such as credit and collections, complaints, orders, acknowledgements, remittances, inquiries, and answers to inquiries. The student will also learn to write business reports based upon the accumulation of primary data and to summarize business conferences. Prerequisite: ENG 102.

ENG-206 Business Communication

(3 - 0 - 3)

Develops skills in techniques in writing business communications. Emphasis is placed on writing action — sales letters and prospectuses, business reports, summaries of business conferences, letters involving credit, collections, adjustments, complaints, order acknowledgements, remittances, and inquiries. Prerequisite: ENG 102.

ENG-1101 Reading Improvement

(2 - 0 - 0 - 2)

Designed to improve the student's reading skills: comprehension and speed. Work attack skills, vocabulary development, phonics study emphasized. Note-taking, outlining, PR 4 method of study and dictionary study included. Individualized instruction, in a laboratory setting.

ENG-1102 Communication Skills

(3 - 0 - 0 - 3)

Designed to promote effective communication through correct language usage in speaking and writing. Prerequisite: ENG 100.

ENV-100 Man and His Environment

(3 - 0 - 3)

A study of the "environmental crisis" including topics such as depletion of our nation's energy reserves; efforts to control pollution, and methods of population control. Solid waste disposal and recycling, sewage treatment, and industrial roles in the causes and controls of air, water, and thermal pollution are covered to the extent that the student will have a working knowledge of factors essential to man's environment. Prerequisite: None.

ENV-110 Man and Ecology

(3 - 3 - 4)

A study of how man has influenced ecology and what he must do in order to insure his survival. Depletion of natural resources, rampant pollution, uncontrolled population are main topics. The student is involved in local ecological issues, in visits to local industry, and in making an "environment scrapbook" to better understand how we are part of the program and solution. Prerequisite: None.

ISC-102 Industrial Safety

(3 - 0 - 3)

Problems of accidents and fire in industry. Management and supervisory responsibility for fire and accident prevention. Additional topics cover accident reports and the supervisor; good housekeeping and fire prevention; machine guarding and personnel protective equipment; state industrial accident code and fire regulations; the first aid department and the line of supervisory responsibility; job instruction and safety instruction; company rules and enforcement; use of safety committees; insurance carrier and the Insurance Rating Bureau; Occupational Safety and Health Act (OSHA); and advertising and promoting a good safety and fire prevention program. Prerequisite: None.

ISC-202 Quality Control

(3 - 2 - 4)

Principles and techniques of quality control and cost saving. Organization and procedure for efficient quality control. Functions, responsibilities, structure, costs, reports, records, personnel and vendor-customer relationships in quality control. Sampling inspections, process control and tests for significance. Prerequisite: None.

***ISC-203 Time and Motion Study**

(3 - 2 - 4)

Principles of motion economy, tools for motion study, time study methods and practice; standard data and formula construction; use of methods-time measurements as a substitute for time studies. Prerequisite: None.

ISC-209 Plant Layout

(3 - 2 - 4)

A practical study of factory planning with emphasis on the most efficient arrangements of work areas to achieve lower manufacturing costs. Layouts for small and medium-sized plants, layout fundamentals, selection of production equipment and materials handling equipment. Effective management of men, money and material in a manufacturing operation. Prerequisite: Consent of Faculty Advisor.

ISC-211 Work Measurement

(3 - 2 - 4)

Principles of work simplification including administration of job methods improvement, motion study fundamentals and time study techniques. Use of flow and process charts; multiple activity charts, operation charts, flow diagrams and methods evaluation. Prerequisite: ISC 203.

MAT-100 Basic Mathematics

(5 - 0 - 5)

Introduction to mathematics including operations with numbers, fractions, per cent, dimensional analysis, signed numbers, elementary algebra, linear equations, basic plane and solid geometry with emphasis on applications. Prerequisite: entrance requirements.

MAT-101 Algebra and Trigonometry I

(5 - 0 - 5)

Number systems of various bases are introduced. Fundamental algebra operations, the rectangular coordinate system, as well as fundamental trigonometric concepts and operations are introduced. The application of these principles to practical problems is stressed. Prerequisite: MAT 100.

MAT-102 Algebra and Trigonometry II

(5 - 0 - 5)

A continuation of MAT 101. Advanced algebraic and trigonometric topics include quadratics, logarithms, determinants, matrices, progressions, the binomial expansion, complex numbers, solution of oblique triangles and graphs of the trigonometric functions. Prerequisite: MAT 101.

MAT-103 Analytical Geometry and Calculus I

(5 - 0 - 5)

The fundamental concepts of analytical geometry, differential and integral calculus are introduced. Topics included are graphing, techniques, geometric and algebraic interpretation of the derivative, differentials, rate of change, the integral and basic integration techniques. Applications of these concepts to practical situations are stressed. Prerequisite: MAT 102.

MAT-105 Introduction to Algebra

(3 - 0 - 3)

A study of algebra stressing solutions of equations and applications.

MAT-108 Business Arithmetic

(5 - 0 - 5)

A review of the fundamental processes: addition, subtraction, multiplication and division of whole numbers, common fractions and decimal fractions; and percentages. Topics covered include interest and bank discounts, payroll records, taxes, retailing costs, markups and discounts.

MAT-110 Business Mathematics

(5 - 0 - 5)

This course stresses the fundamental operations and their application to business problems. Topics covered include payrolls, price marking, interest and discount, commission, taxes, and pertinent uses of mathematics in the field of business. Prerequisite: None.

MAT-112 Mathematics of Finance

(3 - 2 - 4)

The course consists of practical application of business financial transactions involving analysis of statements, interest, present value, yield, discount, compound interest, annuities, extinction of debt and depreciation. Use of modern calculating equipment will be employed. Prerequisites: MAT 101 or MAT 110.

MAT-121 Numbering Systems and Boolean Algebra

(3 - 0 - 3)

It is a study of various numbering systems with emphasis on the binary, octal and hexadecimal as related to one another, the decimal system, and computers; conversions from one system to another; arithmetic operations in nondecimal systems; elementary logic; and Boolean Algebra. Prerequisite: None.

MAT-201 Calculus II

(5 - 0 - 5)

A continuation of MAT 103. More advanced concepts of differentiation and integration are considered. Included are derivatives of the trigonometric functions, exponential and logarithmic differentiation and integration, advanced integration techniques, polar equations, parametric equations. Prerequisite: MAT 103.

MAT-204 Applied Mathematics

(5 - 0 - 5)

A study of geometric principles and trigonometry as related to engineering and related shop applications. Emphasis will be placed on practical application of geometric theorems, right triangle and oblique triangle trigonometry and dimensional analysis. Prerequisite: MAT 102.

MAT-214 Statistics

(5 - 0 - 5)

This is an introduction to statistics with emphasis on data analysis including frequency distributions, measures of location and variation, and probability. Practical problems support the theory. Prerequisite: MAT 101 or MAT 105.

MAT-1101 Fundamentals of Mathematics

(5 - 0 - 0 - 5)

Analysis of basic operations: addition, subtraction, multiplication and division. Fractions, decimals, powers and roots, percentages, ratio and proportion. Plane and solid geometric figures used in industry; measurement of surfaces and volumes. Introduction to algebra used in trades. Practice in depth. Prerequisite: None.

MAT-1103 Geometry

(3 - 0 - 0 - 3)

Fundamental properties and definitions; plane and solid geometric figures, selected general theorems, geometric construction, areas and volumes of solids. Geometric principles are applied to shop operations. Prerequisite: MAT 1101.

MAT-1104 Trigonometry

(3 - 0 - 0 - 3)

Trigonometric ratios; solving problems with right triangles, using tables, and interpolation. All topics are applied to practical problems. Prerequisite: MAT 1103.

MAT-1123 Machinist Mathematics

(3 - 0 - 0 - 3)

Introduces gear ratio, lead screw and indexing problems with emphasis on

application to the machine shop. Practical applications and problems furnish the trainee with experience in geometric propositions and trigonometric relations to shop problems; concludes with an introduction to compound angle problems. Prerequisite: MAT 1104.

MAT-1203 Trigonometry

(5 - 0 - 0 - 5)

A basic review of mathematics will form a foundation for a study of trigonometry of right angles, oblique triangles, and dimensional analysis. Applications to typical problems found in the tool and die shop will be presented and solutions will be found by using mathematics. Prerequisite: MAT 1123.

MAT-1204 Compound Angles and Curves

(5 - 0 - 0 - 5)

The application of trigonometry and geometry are presented to solve compound angle problems. This course will use as many practical problems as possible to enable the student to work with typical problems. Prerequisite: MAT 1203.

***MEC-101 Machine Processes**

(2 - 4 - 4)

A course to acquaint the student with basic machine tools of industry through lectures, demonstrations, and hands-on practice. It will include the study of safety practices; measuring instruments; characteristics of basic machine tools, materials, and cutting tools; and actual experience on lathe, drill press, milling machine, shaper, and grinder. Prerequisite: None.

***MEC-105 Statics**

(5 - 0 - 5)

Concepts and basic principles of statics. Parallel concurrent, and non-concurrent force systems in coplanar and noncoplanar situations. Concepts of friction. Prerequisites: MAT 102, PHY 102.

***MEC-111 Manufacturing Processes**

(3 - 3 - 4)

An introduction to the field of manufacturing processes to include material properties, metal stamping and drawing, casting, forging, die casting, metal joining, heat treating, plastic processing, adhesives, metal finishing, and protective coatings. Prerequisite: None.

MEC-116 Engineering Materials

(3 - 0 - 3)

Study and testing of the properties of ferrous and non-ferrous metals, plastics and construction materials, load and strain measurements, behavior of materials under load, qualities other than strength and control of the properties of materials. Prerequisite: None.

***MEC-205 Strength of Materials**

(5 - 0 - 5)

Study of the basic principles by which stresses and strains are induced in beams, members and structures by imposed loads. Analyses of stresses are made as applied to beams, columns, thin-walled cylinders, spheres, riveted and welded joints, and machine components. Prerequisites: MEC 105, MAT 102.

MEC-206 Dynamics

(3 - 0 - 3)

Study of change of position or motion as it affects machines and their mechanical components. The subjects of mathematical vectors and kinematics

used for design of mechanisms and cams, etc., are introduced. Dynamics formulae are presented and explained. Work problems are provided. Prerequisites: MEC 105, MAT 103, and MEC 205.

***MEC-208 Machine Design I**

(4 - 0 - 4)

A survey course with the selection components in mechanical design, such as power trains, gearing, bearings, shafts, keys, springs, belts, couplings, clutches, brakes, etc., through the use of design information, standards handbooks, etc. Prerequisite: MEC 205.

***MEC-209 Machine Design II**

(4 - 0 - 4)

Study of factors affecting the design of machine elements. Empirical and theoretical equations, practical considerations, and procedures of designing are included. Students given practice in applying knowledge of strength and properties of materials, manufacturing processes, economics of production, safety, and elements of good design through problem assignments. Prerequisite: MEC 208.

***MEC-210 Physical Metallurgy**

(3 - 3 - 4)

Introductory course in metallurgy, a basic study of the properties of metals and alloys. Analysis of the structure of metals and alloys. Atomic structure, and its effect on physical properties. Solid (crystalline) structures, methods, methods of designating crystal planes; liquid and vapor phases; phase diagrams; and alloy systems. Laboratory work to include useful field trips to local industries. Prerequisites: PHY 101, MAT 102.

MEC-211 Basic Physical Metallurgy

(3 - 3 - 4)

An introductory course in the uses of metals and alloys, together with the basic necessary theory for proper metallic materials application. Basic metallurgical theory will be briefly presented. The available common steels and non-ferrous alloys will be discussed. Laboratory work will include physical testing of metal specimens, reading of test results, and field trips to related local industries.

MEC-212 Practical Automation

(3 - 0 - 3)

A comprehensive study of automation as it is interpreted and practiced by American industry of today. The fundamentals of automation and its effects in industrial productivity, labor and demand, equipment and processes. Students will solve problems encountered with installing an automated system. Laboratory work to include useful field trips to local industries. Prerequisite: None.

MEC-220 Power Systems

(3 - 0 - 3)

Survey of energy conversion systems such as the internal combustion engine, power plant, gas turbine, and refrigerator. Basic thermodynamic principles and laws introduced. Prerequisites: PHY 102, MAT 103.

MEC-235 Hydraulics and Pneumatics

(3 - 3 - 4)

The basic theories of hydrostatics and pneumatic systems. Combinations of systems in various circuits. Basic designs and functions of circuits and motors, controls, electrohydraulic servomechanisms, plumbing, filtration, accumulators and reservoirs. Laboratory work to include useful field trips to local industries. Prerequisite: PHY 102.

MEC-1115 Treatment of Ferrous & Non-Ferrous Metals

(1 - 0 - 3 - 2)

Investigate the properties of ferrous metals and tests to determine their uses. Instructions will include some chemical metallurgy to provide a background for the understanding of the physical changes and causes of these changes in metals. Physical metallurgy of ferrous metals, producing iron and steel, theory of alloys, shaping and forming, heat treatments for steel, surface treatments, alloy of special steel, classification of steels, and cast iron will be topics for study. Prerequisite: None.

MEC-1124 Metallurgy

(3 - 0 - 0 - 3)

An introduction course in metallurgy, a basic study of properties of metals and alloys directed to the welding curriculum, instructions include extractive metallurgy, alloys and their purpose, standards and classification, heat treatment and trouble shooting. A thorough knowledge of the effects of heating and cooling is very essential to the welding student. Prerequisite: None.

MEC-1203 Metallurgy

(3 - 0 - 0 - 3)

This is a study of a special group of steels used by the tool and die industry. Students are concerned with the selection, machining, and heat treating of these steels. Troubleshooting to find the reason for possible failure of the steel and the remedy required will be an important part of this course. Prerequisite: None.

MEC-1205 Strength of Materials

(5 - 0 - 0 - 5)

A study of stresses and shears that occur in materials when subjected to tensile compressive, and/or shearing forces. Stresses in thin walled cylinders, riveted and welded joints, shear and bending moment diagrams, deflection, eccentrically applied loads, torsion, and factors of column design will be emphasized. Prerequisite: MAT 1203.

MEC-1209 Hydraulics and Pneumatics

(3 - 0 - 0 - 3)

A basic study of the principles of power hydraulics. Component parts such as reservoirs, strainers, filters, piping and fittings, motors, pumps, and valves will be thoroughly studied. Practical circuits and systems will be covered especially as they are used in the tool and die industry. Prerequisite: None.

***MES-1101 Machine Shop I**

(3 - 0 - 12 - 7)

An introduction to the machinist trade and the potential it holds for craftsmen. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.

***MES-1102 Machine Shop II**

(3 - 0 - 12 - 7)

Advanced operations in layout tools and procedures, power sawing, drill press, surface grinder, milling machine shaper. The student will be introduced to the basic operations on the cylindrical grinder and will select projects encompassing all the operations, tools and procedures thus far used and those to be stressed throughout the course. Prerequisite: MES 1101.

***MES-1103 Machine Shop III**

(3 - 0 - 12 - 7)

Advanced work in the engine lathe, turning, boring and threading machines, grinders, milling machine and shaper. Introduction to basic indexing and terminology of spur, helical, and worm gears and wheels. The trainee will use precision tools and measuring instruments such as vernier height gages, protractors, comparators, etc. Basic exercises will be given on the turret lathe and on the tool and cutter grinder. Prerequisite: MES 1102.

***MES-1104 Machine Shop IV**

(3 - 0 - 12 - 7)

Development of class projects using previously learned procedures in planning, blueprint reading, machine operations, final assembly and inspection. Additional processes on the turret lathe, tool and cutter grinder, cylindrical and surface grinder, advanced milling machine operations, etc. Special procedures and operations, processes and equipment, observing safety procedures faithfully and establishing of good work habits and attitudes acceptable to the industry. Prerequisite: MES 1103.

***MES-1112 Machine Shop Processes**

(0 - 5 - 0 - 2)

An introduction to machine shop. Deals primarily with the identification, care and use of basic hand tools and precision measuring instruments. Elementary layout procedures and processes of lathe, drill press, grinding (off-hand) and milling machines will be introduced both in theory and practice. Prerequisite: None.

OTC-100 Spelling and Punctuation Study

(3 - 0 - 3)

A course designed to help the student overcome spelling difficulties and build punctuation ability. Concentrations will be placed on rules of spelling; use of the dictionary, and a punctuation review. Prerequisite: ENG 111 or 101, ENG 100.

OTC-101 Basic Typewriting

(2 - 3 - 3)

A competency-based introduction to typewriting fundamentals, (keyboard control and techniques), correspondence, and centering applications.

OTC-102 Fundamentals of Typewriting

(1 - 3 - 2)

An introduction to typewriting skills necessary for technical or vocational use. Keyboard control and techniques are developed after an introduction to the principal parts of the keyboard.

OTC-103 Advanced Typewriting

(2 - 3 - 3)

A concentrated effort to continue speed building while more strongly stressing accuracy and introducing correction skills. Production work continues on letters, manuscripts and reports, and form typing is introduced. Speed requirement: 32 words per minute for five minutes. Prerequisite: OTC-101 or SSC-101.

OTC-105 Expert Typewriting

(2 - 3 - 3)

An emphasized development of sustained production on various types of typewriting problems and perfected learning of the mechanism, operation, and care of the typewriter. The speed-building emphasis continues with increased attention to accuracy. Speed requirement: 49 words per minute for five minutes. Prerequisite: OTC 103 or SSC 103.

OTC-110 Practical Office English

(3 - 0 - 3)

This course gives the prospective office technologist practice in the rudiments of fundamental English, including punctuation, capitalization, sentence structure, spelling, and syllabication of the typewritten work. It incorporates the use of office reference books in conjunction with the office-related practice materials. Prerequisite: ENG 111, OTC 100.

***OTC-111 Office Machines**

(2 - 2 - 3)

Designed to introduce the student to the operation of several basic office machines, including bookkeeping-accounting machines, reproduction machines, dictation-transcribing equipment, and other office machine functions. Special emphasis is placed on the proper care of the equipment. Prerequisite: BUS 110 and OTC 103.

OTC-113 Personal Development

(3 - 0 - 3)

Emphasis on grooming, health habits, nutrition, dress, and human relations, and the manner in which each applies to success on the job.

OTC-114 Awareness

(2 - 0 - 2)

Awareness is an attempt to immerse students into one's own world, and worlds around. This represents an effort at allowing the student to make contact with the things which interest and distract. It is an effort to encourage the student to explore the issues central to personal awareness.

OTC-116 Filing

(5 - 0 - 5)

Skill development in records control through instruction in filing principles and theories and actual practice through the use of miniature copies of filing materials. Prerequisite: None.

OTC-205 Professional Typewriting

(2 - 3 - 3)

Job-performance competency is sought through attention to accuracy and correction techniques, and integration of prior speed building and previously learned English. It also includes composition skills related to production work from rough drafts and simulated dictation copy. Speed requirement: 60 words per minute for five minutes. Prerequisite: OTC 105 or SSC 105.

***OTC-211 Typing Office Practice**

(2 - 3 - 3)

The student will be expected to complete more sophisticated typing routines with speed and accuracy. These routines include the typing of manuscripts, tables, statistics, business forms, duplication, executive and legal problems. Prerequisite: OTC 105, OTC 116.

***OTC-213 Office Procedure**

(3 - 2 - 4)

This course is designed to give the student training in the various skills necessary in performing office routines. The students will work with one fictitious company, having four departments. The experience affords the student the opportunity to work for a large company while at the same time preparing him for the duties of the small office. Prerequisite: OTC 105, OTC 111 & OTC 116.

The student will learn how to transcribe mailable letters, and other office communications by transcription from machines. The student will be expected to produce from tapes and belts mailable letters which are free from errors of punctuation, spelling and form. Prerequisite: OTC 105, OTC 111, OTC 100 & ENG 111.

OTC-216 Payroll Procedures

(5 - 0 - 5)

The student will learn to keep the earnings records for various salaried employees. The record keeping will include accounting for earnings, deductions for benefits, Social Security payments, Federal and State Income Tax reporting. The student will also learn to complete quarterly tax return statements. Prerequisite: BUS 117.

***OTC-218 Cooperative or Supervised Education**

(0 - 20 - 2)

In order to receive credit for OTC 218, the student must secure and successfully complete 220 hours of actual employment in a job approved by the department co-op instructor. This experience should allow the student to relate more meaningfully to the world of work and to a specific place in the world of work. Prerequisite: successful completion of all course work.

***OTC-220 Seminar on Cooperative Education**

(2 - 0 - 2)

During the seminar sessions, the working student will discuss the problems encountered in the position and the means to overcome these problems.

OTC-272 Vocabulary Building

(2 - 0 - 2)

A course designed to help students become more aware of an increasing number of English words. By studying prefixes, suffixes, and root words, and by applying certain basic vocabulary building techniques, the student will increase in both active and passive vocabularies. Prerequisite: none.

PED-101 Beginner Tennis

(0 - 3 - 1)

A course designed to give beginners a thorough knowledge of the history, rules and strategy as well as the fundamental skills of tennis.

PED-102 Intermediate Tennis

(0 - 3 - 1)

This is a follow up course to PED 101 with emphasis on game strategy and doubles play.

PED-103 Advanced Tennis

(0 - 3 - 1)

This course is designed to provide students with an opportunity to place into practice the skills developed in PED 101 and PED 102. Emphasis is placed on actual playing time to sharpen previously learned skills and strategies against players of advanced abilities.

PED-130 Beginner Physical Fitness

(0 - 3 - 1)

A course designed to develop the ability to demonstrate vigorous physical action. The course includes endurance, power strength, and agility with the purpose of combining these traits into smooth, effective action both at work and in play.

PED-131 Intermediate Physical Fitness

(0 - 3 - 1)

This course is a continuation of PED 130 and is designed to direct the student in a program of physical development and coordinated movement.

PED-132 Advanced Physical Fitness

(0 - 3 - 1)

This is a follow up course to PED 131 with greater emphasis on rhythmic activity and emphasis on a planned program for future fitness.

PHO-201 Introduction to Photography

(1 - 2 - 2)

Instruction includes the processing and printing of film; photographing scenes, legal aspects of crime photography, preparation of courtroom photo evidence, lighting at a crime scene, care of photographic equipment. Prerequisite: None.

PHY-101 Properties of Matter

(3 - 2 - 4)

A fundamental course covering basic principles of physics including solids and their characteristics, liquids at rest and in motion, gas laws and applications. Units of measurements and their applications are a vital part of this course. Laboratory experiments and specialized problems dealing with these topics are a part of this course. Prerequisite: MAT 100.

PHY-102 Mechanics

(3 - 2 - 4)

Major areas covered in this course are force, motion, work, energy and power. Instruction includes such topics as vectors and graphic solutions, basic machines, friction and torque. Prerequisites: PHY 101, MAT 101.

PHY-103 Electricity

(3 - 2 - 4)

Basic theories of A.C. and D.C. including the electron theory and production of electricity by chemical action, friction, magnetism and induction. Industrial applications involving the use of voltage, amperage, resistance, horsepower and wattage are major parts of the course. Prerequisites: PHY 101, MAT 102.

PHY-104 Light and Sound

(3 - 2 - 4)

A survey of the concepts involving wave motion leads to a study of sound, its generation, transmission and detection. The principles of wave motion also serve as an introduction to a study of light, illumination and the principle involved in optical instruments. Application is stressed throughout. Prerequisite: MAT 101, PHY 102.

PHY-1101 Applied Science I

(3 - 2 - 0 - 4)

An introduction to physical principles and their application in industry. Topics in this course include measurement; properties of solids, liquids, and gases; basic electrical principles. Prerequisite: MAT 1101.

PHY-1102 Applied Science II

(3 - 2 - 0 - 4)

The second in a series of two courses of applied physical principles. Topics introduced in this course are heat and thermometry, and principles of force, motion, work, energy, and power. Prerequisite: PHY 1101.

POL-103 State and Local Government

(4 - 0 - 4)

This course is a study of state and local government, state-federal interrelationships, the functions and prerogatives of the branches. Problems of administration, legal procedures, law enforcement, police power, taxation, revenues, and appropriations are included. Special attention is given to North Carolina governments. Prerequisite: None.

PSM-100 Postal Service History and Organization

(3 - 0 - 3)

A study of the modes of delivery of written communications and merchandise from earlier eras to the present. The present U.S. Postal Service organization will be studied in relationship to its own structure, functions, policies, procedures, and relationship to other government agencies. Prerequisite: none.

PSM-105 Mail Processing

(2 - 4 - 4)

Designed to provide the student with a knowledge of the interrelated factors involved in the collection of mail and its separation into categories. Scheduling and staffing techniques as well as the systems employed in destination separation and the control of quality of mail flow are studied. Also mail processing techniques devoted to the receipt processing and dispatch of second, third, and fourth class mail will be covered. The study will include definition of mail classification and rate determination, regulations regarding packaging size, shape, and sealing techniques and an analysis of the organization, functions, and layout of the Bulk Mailing System and a Bulk Mailing Center. Prerequisite: PSM 100.

PSM-200 Postal Service Labor Management

(3 - 0 - 3)

An overview of Labor-Management relationships in the U.S. Postal Service. The study includes an analysis of laws and regulations pertaining to Labor-Management relationships, current industrial relations issues, description of the National and Local labor agreements, grievance and disciplinary policy and the function of the National Labor Relations Board. Prerequisite: BUS 223 and PSM 100.

PSM-201 Postal Service Support

(2 - 4 - 4)

A study of the ancillary functions such as office, accounting, administrative, warehousing, and distribution services that support the principal functions of the Postal Service. The planning of revenues and facilities and the control of operations is emphasized. Prerequisite: PSM 200.

PSM-202 Postal Employee Service

(3 - 2 - 4)

A detailed coverage of the operation and functions of the Postal Service Personnel office. A review of policies relative to selection, placement, training, and promotion of employees. Salary and wage schedules, insurance and retirement benefits, awards program, and safety and health policies and procedures are also studied. Prerequisite: PSM 201.

PSM-203 Postal Customer Services

(2 - 2 - 4)

An overview of all services provided to postal customers. Includes all mailing services and non-postal services such as Passport Applications, Migratory Birds. Also provides training in customer relations and retail marketing techniques. Prerequisite: PSM 205.

PSM-205 Postal Delivery and Collection

(2 - 4 - 4)

The problems in collecting mail from diverse points and delivering it to collection centers for processing and further delivery to multiple, diverse recipients are studied. The organizational structure and the physical facility of a metropolitan postal system are analyzed. Policies regarding all aspects of collection and distribution are reviewed. Prerequisite: PSM 105.

PSM-206 Postal Problems Analysis

(2 - 4 - 4)

Situation analysis, problem analysis, decision analysis, consequence analysis, and solution analysis are applied to Postal Service problems. Problems related to personal selection and evaluation, job classifications, communication, automation, and costs are explored. Prerequisite: PSM 202.

PSY-151 Applied Psychology for Law Enforcement

(3 - 0 - 3)

This course draws heavily from the field of social psychology, and psychological concepts routinely applied in Criminal Justice. The primary subject areas discussed will be the psychology of conformity, communication, propaganda, persuasion, self-justification, aggression, prejudice, interview and confession, motivation, stress, neurosis, psychosis, personality disorders, sexual deviation, alcoholism and drug addiction. Prerequisite: PSY 101.

PSY-206 Applied Psychology

(3 - 0 - 3)

A study of the principles of psychology that will be of assistance in the understanding of interpersonal relations on the job. Motivation, feelings and topics investigated are employee selection, supervision, job satisfaction, and industrial conflicts. Attention is also given to personal and group dynamics so that the student may learn to apply the principles of mental hygiene to his adjustment problems as a worker and a member of the general community. Prerequisite: None.

PSY-1101 Human Relations

(3 - 0 - 0 - 3)

A study of basic principles of human behavior. The problems of the individual are studied in relation to society, group membership, and relationships within the work situation. Prerequisite: None.

SOC-201 Sociology

(3 - 0 - 3)

A course designed to create a knowledge and awareness of the problems in society today and to fit the students for involvement in those problems that affect their personal lives. Emphasis is on the nature, definition, and analysis of major social problems. While the primary stress is on the sociological point of view, information from other fields in the social sciences is incorporated. Prerequisite: None.

SOC-202 Contemporary Marriage and Family

(2 - 2 - 3)

This course is designed to acquaint the student with problems facing todays young married people and to investigate ways of solving these problems. Emphasis is placed on examining male and female roles, awareness of each others needs and desires, the importance of communicating and developing a healthy sexual relationship. Other areas such as buying a house, buying different kinds of insurance, shopping wisely, and securing loans will be discussed. Efforts will be made to involve community lending institutions, retail stores, social agencies, real estate and insurance firms by inviting representatives to speak to the class. Prerequisite: None.

***TDM-1201 Machine Processes**

(3 - 0 - 12 - 7)

This course is designed to introduce the student to the tools, instruments, machines, and methods used in the tool and die shop. Basic die-making theory will be presented as it pertains to simple piercing, blanking, and bending dies. Each student will be subjected to a series of projects requiring extreme proficiency. Prerequisite: Machine Shop graduate or equivalent.

***TDM-1202 Machine Processes**

(3 - 0 - 12 - 7)

This course is a study of certain individual parts that go into a die assembly. Students will go into detail concerning their making, assembly, functioning and properties necessary for satisfactory service. Continued project work will point out the requirements for precise work. Prerequisite: TDM 1201.

***TDM-1204 Machine Processes**

(3 - 0 - 12 - 7)

This course is a continuation of TDM 1202 in which students will make a detailed study of die-block construction, strippers and stock guides, shredders and knockouts, nest gages, and pushers. Project work has advanced to the finish grinding and assembly stage requiring high quality work from the student. Prerequisite: TDM 1202.

***TDM-1206 Machine Processes**

(3 - 0 - 12 - 7)

A study of die stops completes the study of die components as presented in this course. Stock strip utilization and strip layout will be covered. Die sets and purchased parts will be discussed. We will study die assembly, set up practices, punch press operation, and a miscellaneous group of methods necessary to complete this course. Prerequisite: TDM 1204.

***TDM-1207 Special Problems and Molding**

(3 - 4 - 0 - 5)

This course will be used to subject the student to special problems within local industries. Numerous field trips will be scheduled to review installation of systems, development of dies, tools, jigs and fixtures, and gaging. Each student will be required to follow one complete system from the design stage through to production. Special procedures of die casting, sand casting, shell molding, injection molding, hydro forming, and others will be presented.

WLD-1101 Basic Welding

(1 - 2 - 0 - 2)

Welding demonstrations by the instructor and practice by students in the welding shop. Safe and correct methods of assembling and operating the welding equipment. Practice will be given for surface welding and flame cutting. Emphasis on electric arc and gas welding methods applicable to mechanical repair work. Bronze welding and silver soldering may also be covered.

WLD-1112 Mechanical Testing and Inspection

(1 - 3 - 0 - 2)

The standard methods for mechanical testing of welds. The student is introduced to the various types of tests and testing procedures and performs the details of the test which will give adequate information as to the quality of the weld. Types of tests to be covered are; bend, destructive, free-bend, guided-bend, nick-tear, notched-bend, tee-bend, nondestructive, V-notch, Charpy impact, etc. Prerequisites: WLD 1120, WLD 1121.

WLD-1120 Oxyacetylene Welding and Cutting

(3 - 0 - 12 - 7)

Introduction to the history of oxyacetylene welding, the principles of welding and cutting, nomenclature of the equipment, assembly of units. Welding procedures such as practice of puddling and carrying the puddle, running flat beads, butt welding in the flat, vertical and overhead position, brazing, hard and soft soldering. Safety procedures are stressed throughout the program of instruction in the use of tools and equipment. Students perform mechanical testing and inspection to determine quality of the welds. Prerequisite: None.

WLD-1121 ARC Welding

(3 - 0 - 12 - 7)

The operation of AC transformers and DC motor generator arc welding sets. Studies are made of welding heats, polarities, and electrodes for use in joining various metal alloys by the arc welding process. After the student is capable of running beads, butt and fillet welds in all positions are made and tested in order that the student may detect his weaknesses in welding. Safety procedures are emphasized throughout the course in the use of tools and equipment. Prerequisite: None.

WLD-1122 Commercial and Industrial Practices

(3 - 0 - 9 - 6)

Designed to build skills through practices in simulated industrial processes and techniques: sketches and laying out on paper the size and shape description, listing the procedure steps necessary to build the product, and then actually following these directions to build the product. Emphasis is placed on maintenance, repairing worn or broken parts by special welding applications, field welding and nondescriptive tests and inspection. Prerequisite: WLD 1120, WLD 1121.

WLD-1123 Inert Gas Welding

(1 - 0 - 3 - 2)

Introduction and practical operations in the use of inert-gas-shield arc welding. A study will be made of the equipment, operation, safety and practice in the various positions. A thorough study of such topics as: principles of operation, shielding gases, filled rods, process variations, and applications, manual and automatic welding. Prerequisites: WLD 1120, WLD 1121.

WLD-1124 Pipe Welding

(3 - 0 - 12 - 7)

Designed to provide practice in the welding of pressure piping in the horizontal, vertical, and horizontal fixed position using shielded metal arc welding processes according to Sections VIII and IX of the ASME Code. Prerequisite: WLD 1121.

WLD-1125 Certification Practices

(3 - 0 - 6 - 5)

This course involves practice in welding the various materials to meet certification standards. The student uses various tests including the guided bend and the tensile strength tests to check the quality of his work. Emphasis is placed on attaining skill in producing quality welds. Prerequisites: WLD 1120, WLD 1121, WLD 1123, WLD 1124.

495 TG XL 1199
04/25/95 30395

